Industrial

October 1946

# Standardization

IN RECOGNITION OF SERVICES FREELY GIVEN IN ORDER TO MEET A NATIONAL NEED THROUGH THE DEVELOPMENT OF AMERICAN WAR STANDARDS / THIS CERTIFICATE IS AWARDED TO

JOHN DOE

ONE OF THE MEMBERS OF THE WAR COMMITTEES OF THIS ASSOCIATION, WHOSE DEVOTED LABORS HAVE SERVED GOVERNMENT, MANAGEMENT AND WORKERS WELL. THEIR WORK HAS BEEN SIGNALLY HONORED BY THE ARMED FORCES, AND IS GRATEFULLY ACKNOWLEDGED BY THE AMERICAN STANDARDS ASSOCIATION.

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## Company Members—

Some 2000 Industrial concerns hold membership either directly or by group arrangement through their respective trade associations


# Readers Write

## Should a Single Materials Specification System Be Established?

*The Superheater Company*

*Gentlemen:* If "System" means something like the SAE numerical designation, the answer would seem to be that *one* system is not adequate save for a very special line under particular conditions.

It does seem important that there be a reduction in the number of available specifications for commonly used materials which differ by very small amounts in chemistry and in test requirements. These variations make difficult the use of such specifications in some codes and standards where widely known specifications are listed.

Experience during the war in connection with the National Emergency Steel Specifications, under the auspices of the War Production Board, was illuminating in more ways than one. In many of the committees of the NESS it was shown that very often one specification served adequately where previously there had been five or more, and there was no hardship entailed by eliminating the minor changes in chemistry and testing. Wartime shortages of critical materials prompted the effort to reduce the number of specifications in order to increase production rapidly. Experience during the war has shown that many of those specifications which were not placed on the approved list could well be permanently withdrawn.

It was found that many, but unfortunately not all, of the various requirements for tolerances, tests, and inspections which were causing delay and expense in production were obsolete. These were removed.

More cooperation between consumer and producer interest and, more particularly, cooperation from the governmental departments would be helpful in reducing the number of specifications.

In the views expressed by Messrs Spooner, Briggs, and others (INDUSTRIAL STANDARDIZATION, July 1946) there seems to be close concurrence with what has been stated above.

A reduction in the large number of specifications which differ only in small degree would be of increasing value to producer and fabricator alike as this country enters upon an enlarged export business. Thinking and planning in this direction is taking place in foreign countries at the present time where somewhat the same situation exists.

From a still wider point of view, construction and erection requirements in codes and standards, both national and international, will benefit from a smaller list of acceptable specifications for generally used materials.

H. B. OATLEY

*Eastman Kodak Company*

*Gentlemen:* In regard to the establishing of a single materials specification system, I am inclined to agree with

Karl D. Williams of the Bureau of Ships.

My conception of his "standards" would be standard basic specifications giving such requirements as would lead to standardization of the materials under consideration. Such specifications in most cases would not be used as purchase specifications, but could be made part of, or referred to, in the more complete government and industrial purchase specifications.

It is true that the various agencies of the government and various industries have special and individual requirements as regards a particular material, but it is also true that a single material will often satisfy many different requirements. Frequently the differences in various specifications covering essentially the same material are purely arbitrary and the result of lack of cooperation between the specifying agencies.

I believe that basic standards or basic standard specifications can be established for government and industry. These would not be purchase specifications but would be made part of purchase specifications.

J. M. PATEK
*Material Standards Department*

*Mills Industries, Inc*

*Gentlemen:* Our company is not a large company, therefore I believe we voice the experience of Little Industry.

During the war the many overlapping government and engineering society standards were a cause of mass confusion. Small industry needs compact single standards for materials and processes. If larger industry requires narrower standards let both be incorporated in one standard with grade designations to identify closer limits for chemicals, properties, etc.

Recognizing that our national and civilian economy must be united during periods of national emergency we must build for such procedures that are common for government and civilian requirements, and now is the time to start.

D. V. EDGAR

## Need for Style Manual

*Crane Company*

*Gentlemen:* May I compliment the American Standards Association on its initial presentation of the Proposed Style Manual for American Standards. Unquestionably, there is a need for such a document when one realizes the recognition standards are receiving and their wide use both by purchasers and consumers.

W. P. KLIMENT
*Engineer of Standards*

### Our Front Cover

Awards similar to the one made out to "John Doe" on our front cover were presented to 1,300 members of ASA War Committees at a ceremony on the anniversary of V-J Day. (See page 245.)


# Industrial Standardization Vol 17 No. 10

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## Contents


**Honor War Committee Members** ..... 245

Welcome to War Committee Members. By Rear Admiral F. E. Haeberle ..... 246

Why Navy Appreciates Work on Standards. By Rear Admiral Charles A. Dunn ..... 246

Voluntary Standardization—Weapon for Peace. By Brigadier General Donald Armstrong ..... 248

Presentation of Awards. By Henry B. Bryans ..... 249

**Abbreviations and Symbols—**

Committee Asks Data on Abbreviations, Symbols ..... 260

**Associations and Government—**

Crittenden New Member of Committee on Measures ..... 253
NEMA Annual Meeting October 28-November 1 ..... 262
New Standards in ASA Library ..... 265
Actions on Commercial Standards and Simplified Practice Recommendations ..... 266

**Consumer—**

Lingerie Council to Study Standards ..... 260

**Electrical—**

Standard Yarn Numbering System Proposed to Help Electrical Industry. By A. A. New ..... 261

**From Other Countries—**

New Standards from Other Countries ..... 263
Head of South African Bureau Describes Standards Program ..... 264
British Countries Act for More Uniform Standards ..... 264
Australia to Unify Railway Gauges ..... 265

**Inspection—**

Inspection by Photography. By Harry F. Schoenfelder ..... 255

**Office Equipment and Supplies—**

Standards to Aid Office Economy. By E. H. Conarroe ..... 251

**Safety—**

ILO Committee Completes Draft Factory Safety Code ..... 250
Safety Engineer to Speak at Annual Safety Congress ..... 250
Standards Council Authorizes Project to Develop Safety Code for Manlifts ..... 254
Fire Prevention Week to Be October 6 through 12 ..... 254
Ainsworth to Serve on Executive Committee for Safety Standards ..... 254
Public Health Service Issues Drinking Water Standards ..... 260
Research to Give Data on Industrial Ventilation ..... 260

**American Standards Association—**

Personnel
Tesi Is New ASA Staff Member on Standards for Consumer Goods ..... 253
General Armstrong Receives Distinguished Service Medal ..... 263

ASA Standards Activities—
American Standards ..... 267
News About ASA Projects ..... 267



October, 1946 Ruth E. Mason, Editor 35 Cents


The American Standards Association is a federation of national groups dealing with standardization. Through it, government, industry, labor, and the consumer work together to develop mutually satisfactory national standards. It acts as the authoritative channel for international cooperation in standardization work.


Subscription price $4.00 per year (foreign $5.00). Special to schools and libraries $2.00 (foreign $3.00). Re-entered as 2nd Class Matter 7/31/43, at the Post Office, New York, N. Y., Act of March 3, 1879.

Members of the ASA War Committees assembled on the deck of the aircraft carrier, USS Kearsage. Rear Admiral Charles A. Dunn is at the microphone.

On this first anniversary of the cessation of hostilities in World War II, I congratulate the members of the American Standards Association on their essential contribution to our magnificent war production effort. I am sure they will be no less earnest in their efforts to safeguard our future security and to promote the speedy development of full peacetime economy.

KENNETH C. ROYALL
Acting Secretary of War

I join a grateful people in honoring a group of engineers who served untiringly and ingeniously in the long, hard struggle for victory. The same technical superiority which made the United States the world's most powerful nation must be utilized in the present period of reconversion and transition to maintain that power in peace. This nation needs the services of the minds who designed and produced the tools of war. Now is not the time to lay down these new tools but rather to take them up. We must improve and perfect them in shaping a world of tomorrow worthy of the bitter sacrifice by which victory was attained. These tools, and the many branches of research and development which grew out of them, must now serve us as guardians of our security. With such a guarantee of peace we may turn with confidence to the building of a community of nations united in progress and common understanding.

JAMES FORRESTAL
Secretary of the Navy

# Honor War Committee Members

## 1300 engineers who helped prepare American War Standards are given Victory Awards; complimented by Army and Navy

AT a ceremony attended by high-ranking Army and Navy officers, the 1300 engineers whose work on War Standards Committees helped to increase industrial efficiency in war production were honored by the American Standards Association on the first anniversary of V-J Day. Victory awards were presented to the former War Committee members at a dinner at the Officers' Club of the Brooklyn Navy Yard in New York City. Three hundred of the 1300 engineers who had voluntarily given their time and experience to the development of American War Standards were present from every section of the United States, and from Canada. Their work on the more than 160 American War Standards projects had covered a wide variety of subjects, including such problems as standards for radio components and for photographic equipment, international agreement on standard screw threads, safety standards to help keep up a high level of production by preventing lost-time accidents, and statistical methods to help in controlling the quality of the product during manufacture.

### Awards Received by ASA For Work Done by Committees

"The American Standards Association has received awards from Army and Navy for the work that *you* have done. We, therefore, feel that we owe you the same recognition that we have received from the Departments of War and Navy," Howard Coonley, chairman of the Executive Committee of the American Standards Association, told the former committee members who attended the presentation ceremony.

Before assembling for the dinner and presentation of the awards, the guest engineers were taken on an inspection tour of the aircraft carrier, USS Kearsage.

Rear Admiral F. E. Haeberle, Commander of the New York Naval Shipyard, welcomed the party at the Officers' Club following inspection of the Kearsage. "The results of your research and standards work, in peace and in wartime, have been applied at this shipyard and have contributed to quantity and quality of its output," he told them.

### Standards Laid Foundation For Industrial Preparedness

Rear Admiral Charles A. Dunn, Supervisor Inspector of Naval Materiel, one of the speakers on the program, told the members of the ASA War Standards Committees, "Your more than 80 safety codes were as important for us as your standardized terminologies for technical terms, so were your conversion tables from inch to metric measurements, your specifications for rivet steel and rivets, and your many other standards varying in size from a few pages to a thick volume. Your peacetime work has helped our industry in tooling up for war work. It has laid the foundations for our industrial preparedness."

### Industrial Leadership Insurance for Peace

Speaking for the Army, Brigadier General Donald Armstrong, former Commandant of the Industrial College of the Armed Forces, declared that "American industrial leadership is our best insurance for peace as well as our most effective weapon in time of war."

"If we do not improve our methods and planning, if through the stimulus of ASA we do not accelerate the program of standardization, we put ourselves in a position of inferiority in our international relationships and inferiority may well mean national extinction," he said.

### President Bryans Presented Victory Awards

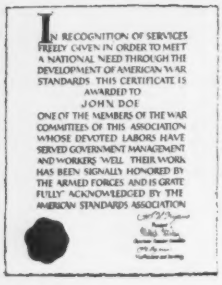
The work of the ASA War Committee members was described by Henry B. Bryans, president of the American Standards Association, who made awards to the 300 committee members present at the Victory Day celebration.

Following President Bryans' presentation of the awards, Howard Coonley, chairman of the Executive Committee of the American Standards Association, rose to announce that he had an award to make which, he said, "gives me deep satisfaction". "It is to a man," he continued, "who is outstanding in character, broad in knowledge, and courageous in spirit,—a man who has given his life to the cause which we are celebrating tonight. Had it not been for the imagination, determination, and tireless effort of Paul G. Agnew, the standards movement could not have been elevated to its present place in our economic life."

The speeches presented at the Victory Award dinner are given in full on pages 246 through 250. They tell in detail why the Army and Navy, as well as the American Standards Association, believed the members of ASA War Committees should receive special recognition.

# Welcome to War Committee Members

***By Rear Admiral F. E. Haeberle***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AS Commander of the New York Naval Shipyard, I welcome you members of the War Standards Committees of the American Standards Association. Today, we celebrate Victory Day—just a year after V-J Day. A year ago, our armed forces won victory over the Imperial Japanese armies and navies. This victory was achieved by American men, American materials, and American machines. It is quite fitting that the American Standards Association should celebrate today by remembering the men whose voluntary civilian work has contributed to this victory.

You, the members of War Standards Committees, have just visited one of the newest of the mighty weapons of our fleet, the Aircraft Carrier USS Kearsage, built by the workers of this shipyard. Your work has helped to make this aircraft carrier an efficient tool for our Navy. The results of your research and standards work, in peace and in wartime, have been applied at this shipyard and have contributed to quantity and quality of its output.

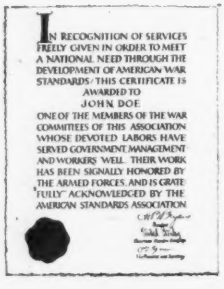
### American Standard Safety Codes Protected Shipyard Workers

All the safety codes developed by your Association have protected the many thousands of our war workers. The Bureau of Yards and Docks has adopted your recommendations for removal of accident hazards for all Naval shore establishments. Our many cranes, derricks, and hoists are standardized, and so are the safety precautions for their use. We have worked with you in developing, during this war, protective equipment and safety clothing for the many women who worked in the shipyard. Our laboratories and facilities for testing materials have closely cooperated with you in developing new and better ways of checking on the quality of equipment for the Navy. We have contributed research data to your work and you have in turn supplied a large number of standards that helped us to improve our output and serve the needs of a five-ocean world war.

Thus, the selection of the New York Naval Shipyard for this celebration is symbolic of the close cooperation between our armed forces and science and industry represented by you. We are glad to have you here with us on this first Victory Day. We congratulate you for your well-deserved award. May I express the hope that also in the years to come the cooperation between you, as the civilian developers of standards, and the New York Naval Shipyard, as the center of industrial and scientific developments for the preparedness of our country, may continue.

# Why Navy Appreciates Work on Standards

***By Rear Admiral Charles A. Dunn***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IT was not alone the work that your Association had done during this war to serve the immediate existing needs of the services, but even more the work that you had done in the 25 previous years for the improvement of American production and preparedness that prompted us to single out your organization for its contribution to the armed forces. When this war started, you had about 600 standards on your books covering the whole range of industrial production from dimensions and designs for bolts and nuts to testing methods for materials. Your more than 80 safety codes were as important for us as your standardized terminologies for technical terms, so were your conversion tables from inch to metric measurements, your specifications for rivet steel and rivets, and your many other standards varying in size from a few pages to a thick volume. Your peacetime work has helped our industry in tooling up for war work. It has laid the foundations for our industrial preparedness.

If there is anything to complain about, it is the fact that you did not have more standards ready to speed up the country's war production efforts.

All of you remember how many months it took to produce the first thousands of airplane engines. This story repeats itself. In 1798, our government was in need of more and more arms. Jefferson, then Vice President, signed a contract which bound Eli Whitney to supply 10,000 muskets in two years. At the end of the first year, only 500 had been delivered, a production of less than two a day. The two years expired and so did Whitney's contract. Necessity became the mother of invention. Urged by the government, Whitney submitted to a board of experts the assembly parts of ten

***Rear Admiral Frederick E. Haeberle** is Commander of the New York Navy Yard. Since 1937, he has been head of the Design Section of the Bureau of Ships and then head of the Construction Branch of the Shipbuilding Division. While with the Construction Branch, he designed the USS Yorktown, the USS Enterprise, and the USS Wasp. As designer of ships, and as Commander of the Navy Yard, he has had frequent contacts with industry.*

muskets and in their presence assembled from ten identical barrels, ten identical stocks, and ten identical triggers the first ten standardized rifles. By introducing the principle of interchangeable parts for armament production, he thus became the father of mass production for war purposes.

The traditions of Eli Whitney's inventiveness carried on by you have many times worked miracles. Through standardization of Army and Navy photographic and motion-picture equipment, we succeeded in shortening the training period of technical personnel, of aircraft pilots, of gunners, by more than 40 percent. By reducing the number of models in radio equipment, by simplification and standardization of component parts of military radios, you helped to bring our communication systems to a level unachieved by any other of the nations at war.

Some of your war work has helped the country to save scarce materials; for example, a reduction in the number of pipe fittings from 8,000 to 3,000. This meant an increase of between 15 and 25 percent in production for this one branch of industry alone. It meant a saving of more than one million pounds of scarce copper base alloys, enough to produce about one million 50-mm fuses. Your work in establishing specifications for the Office of Price Administration has benefited the armed forces by preventing price rises. The establishment of specifications in price control matters was a necessary condition for protecting this country against uncontrolled inflation during wartime.

When industrial accidents in 1941 increased 25 percent over the rate of 1940, the manpower loss equalled the man hours required to build 30 battleships. The application of safety codes developed by the American Standards Association considerably reduced the loss of the then so scarce manpower.

We had to rely a lot on subcontracting to supply the necessary arms and equipment during the war. Standardization helped to coordinate methods and techniques between prime contractors and subcontractors. It not only taught them to speak the same language, to use mutually understandable blue prints, but it made them also produce parts to close tolerances and with unaccustomed precision. Your standard for the application of statistical methods for control of manufactured products and processes introduced new ideas into methods of quality control. They enabled the manufacturer, and through him the armed forces, to get more uniform quality of product, to reduce scrap to a minimum, and to discover irregularities in the product early enough to prevent rejections.

Many of your wartime standards will benefit civilian production in peacetime. Of the more than 160 standards projects undertaken by you, not more than 12 will have to be dropped. Such programs as the standardization of screw threads, of pipe fittings and flanges, of welding apparatus, and of cylindrical fits, will become the property of the engineering profession, the same as Eli Whitney's principles of mass production, the interchangeable parts, have become the common property of all manufacturers.

How much your voluntary wartime work contributes to the civilian needs of our people can hardly be guessed, but to give you a small example, I may mention a gadget that you have all received today as a souvenir of the American Standards

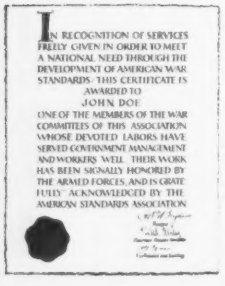
***Rear Admiral Charles A. Dunn** has been Supervising Inspector of Naval Materiel since January, 1946. During the war, he served as Fleet Maintenance Officer in the Pacific Area and for his services was awarded the Legion of Merit by Admiral Nimitz. In 1945, he became Maintenance and Repair Head, War Shipping Administration.*

Association—the standard computer for picture exposure. Every combatant ship of our Navy had an observer with a photographic camera. We could not afford to train all these men as expert photographers, so we developed, with the help of the American Standards Association, a photographic exposure guide that each of our men carried in his shirt pocket; and that in a nut shell was a substitute for years of photographic training. Your association may have been surprised by the popularity of this little gadget. I understand that almost 70,000 civilians wanted it and bought it.

There can be no doubt that this last war, like all wars, has made American industry conscious of the benefits of simplification and standardization. There can also be no doubt that your efforts toward the winning of this war have resulted in a lasting contribution toward a higher standard of living for the American people. The awards that you will receive today for your unselfish and devoted work in developing American War Standards are well deserved.

# Voluntary Standardization—— Weapon for Peace

### *By Brigadier General Donald Armstrong*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TONIGHT we are celebrating, and justly so, what you accomplished in and by standardization during World War II. It is a magnificent record.

You have earned your awards.

Nevertheless, we should bear in mind that complacency concerning the accomplishments of this group and ASA in standardization in the late war might hamper further progress. Undeniably it was an effective contribution to victory. But now we must examine the future with care.

When we look at the overwhelming victories, on land, on sea, and in the air, we cannot underestimate the leadership of our Army, Navy, and Air Forces. And yet the industrial genius of the United States was the basic and fundamental reason why the Allies won this war. Governmental organization as it finally evolved directed this genius into proper channels. Our own tremendous natural resources, the technological skill of our scientists and business managers, and an enormous reservoir of labor played their part.

But in the field in which we are particularly interested, what did we see? Why are we expressing tonight the gratitude of ASA for your contribution to an industrial achievement that increased productivity, saved raw materials, and facilitated distribution and maintenance operations, that we in the Armed Forces call logistics?

In spite of progress in standardization from 1918 to 1941, the improvement was not enough. Just as in 1917 and 1918, from 1941 to 1945 there was a mad scramble to compensate for neglect and indifference with respect to standards. If we do not improve our methods and planning, if through the stimulus of ASA we do not accelerate the program of standardization, we put ourselves in a position of inferiority in our international relationships, and inferiority may well mean national extinction.

In the world today, two different ways of life are competing with each other. One has absolute governmental control of the economy in peace and in war. Such a system needs no modification in the transition from peace to war. It results in more uniform machinery and designs. Standardization is accomplished by government fiat. Theoretically this helps maintenance, facilitates training of both labor and the Armed Forces, and what is important in the atomic age, makes a shift from a destroyed area to one untouched by war a comparatively simple matter.

And yet coercion by the government only *appears* to be the most

***Brigadier General Donald Armstrong*** *speaks with authority about standards because of his experience as Chief of Maintenance, Office Chief of Ordnance, as Executive Officer and Chief of the Chicago Ordnance District, and as Commanding General of the Ordnance Replacement Training Center at Aberdeen, Maryland. His most recent service has been as Commandant of the Industrial College of the Armed Forces. Upon his retirement from the Army in August, he joined the staff of the American Standards Association to work with Howard Coonley, chairman of the Executive Committee of the ASA, in broadening the scope and activities of the Association. On August 16 he was awarded the Distinguished Service Medal.*

effective way to assure standardization and to secure maximum production. The history of World War II proves that total government control in Germany and Japan was by no means entirely successful. Under the stress of war, free men working for a common end have produced more and have standardized better than industry under a dictatorship. Our record is by no means perfect. In fact, unless we seek and apply the lessons of the war in the experience of this and other countries for the benefit of our future industrial mobilization plans, we shall not do our duty. Remember that whatever is good for the American economy is helpful in preparing a more effective industrial mobilization.

Here is the proof. When Albert Speer, Nazi Minister of Armaments and War Production, was under cross examination, he stated that German production methods and design details were so varied that much could have been done to improve production and equipment by standardization.

In a book soon to be published, called *The Lost War, A Japanese Reporter's Inside Story*, Masuo Kato says,

> "Japan's prewar dependence on the outside world for machine tools was an obstacle to the standardization of parts, so essential for mass production. The gauge on machines from the United States, Germany, England, and Belgium was different, limiting standardization. Rivalry between the Army and the Navy aggravated this problem also. There was little exchange of technical information between the two services. Even in such a matter as ordering a screw, the Army might specify a left-handed thread while the Navy demanded a right-handed thread in an otherwise identical item. When the Navy needed more planes to defend Saipan, Army types were unsuitable, and Army plane parts could not be used in the manufacture of Navy planes."

It is gratifying to verify by this testimony that democracy is more efficient in war provided we have time. We have had the time in 1917 and again in 1941 because our allies held off the enemy while we prepared.

Do you realize what time was necessary to complete these preparations? In the Ordnance Department we started our mobilization in September of 1940. Even with the warning that the outbreak of the war in Europe had given us, it required over two years from the attack at Pearl Harbor for us to reach maximum war production. Today the United States has a new position in world strategy. There is no balance of power in Europe. The airplane, the new methods of amphibious warfare, the guided missiles or rockets have made this country far more vulnerable to aggression. We must assume that the first attack, if it comes, will be directed againt us and not against potential allies. It is a grave error to delay preparing our national economy for war until international relations have begun to deteriorate. In other words, the lesson that we must learn is that under present conditions the need for standardization is more urgent than it ever has been in the past.

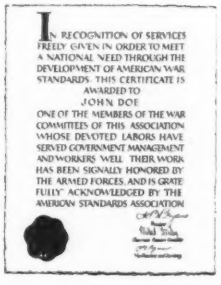
It has been my good fortune to work with Mr John M. Hancock of Lehman Brothers. I would like to emphasize a lesson I learned from him that the greatest power of management is the ability to influence people to cooperate for a common purpose. ASA is the manager designated to forward standardization wisely and well. We are the trustees not only of the associations and companies which support us, but also of the entire American people. Our responsibility is plain. We must resist the drift to government control and operation. Under free enterprise we can do a better job of standardization than can be accomplished by the government.

You, as the men who developed the standards for America, understand the nature of industrial leadership through technical perfection. This industrial leadership of America is probably the strongest pacifying force that there is on this globe today. In this sense, you all are serving the cause of peace. May I invite you all to continue in serving this cause of peace, so that we and our children may harvest the fruits of the victory that we celebrate today?

# Presentation of Awards


***By Henry B. Bryans***

*President, American Standards Association*



IN RECOGNITION OF SERVICES FREELY GIVEN IN ORDER TO MEET A NATIONAL NEED THROUGH THE DEVELOPMENT OF AMERICAN WAR STANDARDS THIS CERTIFICATE IS AWARDED TO
JOHN DOE
ONE OF THE MEMBERS OF THE WAR COMMITTEES OF THIS ASSOCIATION WHOSE DEVOTED LABORS HAVE SERVED GOVERNMENT MANAGEMENT AND WORKERS WELL THEIR WORK HAS BEEN SIGNALLY HONORED BY THE ARMED FORCES AND IS GRATEFULLY ACKNOWLEDGED BY THE AMERICAN STANDARDS ASSOCIATION

IT has been estimated that standardization freed ten percent of our industrial manpower for additional work on war orders. Simplification and interchangeability in the pipe and fittings industry has not only considerably reduced transportation cost and warehouse space required, but reduced the necessary inventory by 26 percent. Standardization augmented the productive capacity of our war machinery between 10 and 20 percent. Its economic advantages in the steel industry alone equalled the value of an added annual capacity of 5 billion tons. Standardization, as a tool of business, will not fail to contribute equally and more to our peace economy.

We are entering a new period of peak production. We hear of a need for more than 10 million new homes. We know that it will take years to build the millions of automobiles that our population wants. Refrigeration, modern plumbing, sanitation for communities, public building projects, modernization of our industrial plants, and on top of all of it our need to supply the world with goods of any description, will keep our wheels going for years to come. Our productivity, our ability to satisfy this tremendous accumulated demand for more, for new, and for better goods depends on increasing integration of our industrial machinery. Development of industrial standards creates an economic chain reaction. You all have observed how a few drops of lubricating oil sometimes speed up the operation of a tremendously heavy and complicated machine. Standardization serves with respect to our whole economic machinery as the lubricant that removes friction and makes the wheels turn.

We are proud of the contribution that we were called upon to make during this war. I believe I can promise in the name of all of you and of the American Standards As-

sociation that we will continue to serve the cause of standardization.

The Army and Navy have, as you know, honored the ASA with service awards. We, the directors of the ASA, feel that these awards belong to you, the men who so unselfishly have given of your time, your knowledge, and your energy.

It is indeed a great honor for me as the president of the American Standards Association to transfer to you the recognition received from the departments of the Navy and of War. The document that you will receive from us today is but a token recognition for your services, but I am convinced that it will always remind you, your family, and your friends of a service that you have rendered with pride.

# ILO Committee Completes Draft Factory Safety Code

Discussion of a preliminary draft of the Model Safety Code for Factories being prepared by the International Labour Office was completed at a meeting of the Correspondence Committee on Accident Prevention of the International Labour Office at San Francisco July 12 through 31. Members of the committee from eight of the countries were present. Cyril Ainsworth, technical director and assistant secretary of the American Standards Association, one of the members representing the United States, took an active part in the work of completing the preliminary draft.

### Recommendations to Be Used In Planning New Factories

The proposed Model Code is intended to offer recommendations which will be used in planning the lay-out, construction, installation, and operation of new factories in all parts of the world, especially in the countries ravaged by the war and in those countries which are developing new industries and factories. It covers all machinery, equipment, processes, and operations used or carried on in factories. The definition of "factories" does not include mines, building and civil engineering construction, railways, road transport, and shipping.

The draft code as approved by the Correspondence Committee will now be submitted for further discussion to a preparatory Technical Conference made up of delegates representing the governments, employers, and workers of the various states that are members of the ILO. It will then go to the International Labour Conference for adoption.

Two types of documents are prepared by the International Labour Office: Conventions, which are treaties binding upon the states that ratify them; and Recommendations, which are noncompulsory standards. Although not subject to formal ratification by the member states, the recommendations must be laid before the legislative authority of each state within a specified period for such action as may be considered desirable.

Three Conventions have been adopted to date. These cover:

- Marking the weight on heavy packages transported by vessels, (adopted in 1929)
- Protection against accidents of workers employed in loading or unloading ships (adopted in 1932)
- Safety provisions in the building industry (adopted in 1937)

Nine Recommendations are now in effect, covering:

- Prevention of accidents (adopted in 1929)
- Responsibility for the protection of power-driven machinery (adopted in 1929)
- Reciprocity as regards the protection against accidents of workers employed in loading or unloading ships (adopted in 1929)
- Consultation of workers' and employers' organizations in the drawing up of regulations dealing with the safety of workers employed in loading or unloading ships (adopted in 1929)
- Expediting reciprocity as provided for in the Convention adopted in 1932, concerning the protection against accidents of workers employed in loading or unloading ships (adopted in 1932)
- Safety provisions in the building industry. With Annex: Model Safety Code (adopted in 1937)
- Inspection in the building industry (adopted in 1937)
- Co-operation in accident prevention in the building industry (adopted in 1937)
- Vocational education for the building industry (adopted in 1937)

In addition to these Conventions and Recommendations, which are instruments formally adopted by the International Labour Conference, a series of special, technical studies on different safety problems is issued by the International Labour Office. The Office is the permanent secretariat of the International Labour Organization. The following studies have already been published in this series:

- Safety devices for wood-working machinery (Great Britain and Switzerland) (1925)
- Safety in the use of chains (1928)
- Hydro-extractors: Their safe construction and equipment (1929)
- Protection of workers operating metal-working presses (1930)
- Safety in the manufacture and use of acetylene (1931)
- Safety in the manufacture and use of celluloid (1933)
- Safety in spray painting (1935)
- Safety in the construction and use of lifts (1939)
- Safety in the use of abrasive wheels (1944)
- Safety in dock work (1945)

### Draft Code for Coal Mines and for Civil Engineering

The ILO has also prepared a draft Model Safety Code for Underground Work in Coal Mines, which was to be considered by a Preparatory Technical Conference in 1939 but was delayed by the war. A Model Safety Code for Civil Engineering Works is under way, a preliminary draft having been prepared by Ole Singstad, formerly chief engineer of the New York Tunnel Authority, and now Consulting Engineer.

## Safety Engineer to Speak At Annual Safety Congress

Henry G. Lamb, ASA Safety Engineer, will take part in a panel discussion on "Accident Facts" to be held at the Thirty-Fourth National Safety Congress and Exposition in Chicago, October 8. The Congress is scheduled for October 7 to 11. The panel discussion will cover basic principles to find fundamental causes, and case history analysis.

*Ewing Galloway*

# *Standards to Aid* OFFICE ECONOMY

***By E. H. Conarroe***

THE major application of the principles of standardization in the past has been in the field of industrial products and processes, but there is just as much need for standardization in the office and just as much to be gained through its application to the problems of office equipment and operations as to those of production. In the final analysis, good business management involves control, and control in the office, as elsewhere, is facilitated where standards are available to measure the performance of office equipment or personnel. A major function of the office is record keeping for control purposes. In view of the fact that those records are used in all phases of the business undertaking, the standards used in improving office efficiency and economizing on office operations will necessarily be of interest and advantage to all concerned with any phase of business or industrial management.

Standardization in the office has an unusually wide application, as shown in the following analysis. In all of these fields difficulties have arisen through lack of standardization.

### Equipment—

This is a big field in itself, encompassing such items as desks, chairs, filing cabinets, tables, vaults, bookcases. Here, questions of size, style, finish, and construction are factors that lend themselves to standardization. Variations in these characteristics have created problems in office layout and arrangement, as well as in the maintenance and use of office equipment. These problems have been emphasized during the war period when materials have been relatively unavailable.

Recently, for example, a company was faced with the problem of setting up a temporary office. Those in charge had to scour around for chairs, desks, and other equipment wherever obtainable. When assembled, the lack of standardization in size and design in the equipment was quite conspicuous. This presented a serious problem of office layout, and added considerably to operating difficulties.

Color is another problem that frequently causes trouble. It has been almost impossible to bring about agreement among the suppliers as to what is meant by "olive green," for example. In some cases, this lack of agreement makes it necessary to completely refinish new filing equipment if a company wants to avoid an office full of different shades of green. The same problem of nonstandard colors has been faced by industry, and in at least one case, that of machine tool gray, has been satisfactorily solved.

### Forms and Records—

Standardization of the equipment that houses office records leads directly to standardization of the forms or records themselves. This involves questions of paper, size, grade, color, form, arrangement, quality, and wearability. It covers a tremendous field which offers great possibilities for economy. A start has already been made on this problem by the

National Association of Purchasing Agents through the development of a simplified invoice form several years ago.

### Physical Factors—

Questions of heat, light, ventilation, and noise control are office problems that lend themselves to standardization with great benefit to management. How much light is needed for different types of office work? What constitutes "satisfactory ventilation" and how can it be obtained? Do some departments need noise control for efficient performance of their duties, and others not? How can the noise level be tested so that comparable results can be obtained and the need for noise control determined? What office temperatures should be sought as being conducive to peak efficiency of personnel engaged in various office functions? There is need for uniform and accepted standards, and many of these standards will affect other phases of the problem. Determination of uniform and accepted standards of lighting for various types of office activities, for example, will in turn affect the design and style of the lighting fixtures used.

### Supplies—

There is an almost unlimited field for standardization of office supplies. Thousands of items are susceptible to study. There are binders, for example, which are closely allied to the problem of office forms and records. Standardization of the position of the binder rings would affect the standardization of the punchings of the forms and records to be kept in them. Ink is an important commodity in the office, and there is need for established standards as regards fadeability and fluidity. Then there are such items as carbon paper, typewriter ribbons, paper clips, pencils, erasers, and rubber bands, for which performance and quality standards are needed.

### Terminology—

There is a wide variation in the use of many office terms, so much so that in general we do not speak the same language in the office. A simple example is that of ordinary job titles and job descriptions. The terms "cashier", "file clerk", "secretary", "bookkeeper" do not mean the same thing in all organizations. The term "dismissal" means one thing in one company, another thing in the one down the hall. There is considerable variation in the terms used in connection with the printing or reproduction of office forms and records. All this indicates that there is a big field for exploration and standardization in the field of terminology. It would be helpful if we could all talk the same language.

***E. H. Conarroe** is chairman of the board of the National Office Management Association, which asked the American Standards Association to undertake a project for standardization of office equipment and supplies. Here, Mr Conarroe explains why the Association considers such a project important.*

*As a result of the Association's request to the ASA, a conference of representatives of manufacturers of office equipment and supplies, groups concerned with office management and purchasing and government procurement agencies met August 21 at the invitation of the American Standards Association. They agreed that the proposed standardization work should be undertaken. The recommendations of the conference regarding the organization of the program will be presented to the Standards Council of the ASA.*

### Procedures and Routines—

The increasing number of governmental statutes and regulations affecting business has emphasized the need for simplified and standardized procedures and routines—such as time-recording practices and record-retention schedules. Common agreement on the standard "period of keep" for different types of office forms and records would be a help as a guide to those in charge of office filing systems.

### Personnel Factors—

In the field of personnel there are many opportunities for the development of standards. What, for example, are the physical requirements for various types of office activities? And what might be considered adequate safety standards in the operation of an office?

### Performance—

There is serious need for some authoritative data as to what constitutes practical production standards for various office operations. Office managers would be eager to have some standard guide by which to judge reasonable performance on such operations as addressing envelopes, filing, opening and sorting mail, and many other activities that are carried on within the office. One writer several years ago indicated how complicated the problem could be when he asked: "How would you measure typing output — on the square inch, the page, or the 'keystroke' basis? How would you make allowance for single and double spacing, for different number of copies typed at one time, for simple, clear copy as opposed to difficult, interlineated copy, for address and salutation in a letter?"

## Progress Already Made in Individual Companies

Progress has already been made in the development of standards in some of these fields. There are a few isolated examples where the standardization problems involved have been recognized by outstandingly progressive companies and where standardization programs for office equipment, forms, and procedures have been inaugurated. Any one company is limited in the results it can accomplish along these lines, however, and its activity needs to be correlated and coordinated with that of other organizations concerned with the manufacture and use of a wide variety of office equipment and supplies. In this field more than in almost any other the standards of one group must interlock with those of other groups. Office standards need the prestige of official and national adoption in order that the maximum benefits can be obtained. Worthwhile results are possible only if there is a cooperative approach to the problem.

The National Office Management Association is an organization whose membership includes some 6,500 executives immediately concerned with office management responsibilities. During the 27 years of its

existence it has grown consistently in size and importance. In view of the fact that the quality and efficiency of office operations have a direct bearing on the results obtained by business as a whole, the Association has an active stake in promoting and facilitating better management in the office and the more economical conduct of office operations. In the earlier stages, research efforts of the Association were devoted largely to surveys of current practices in effect in various member companies. This information has proved helpful, but it was soon recognized that the fact that certain practices were preponderantly in use did not necessarily mean they were the most effective.

Accordingly, last year the Association embarked on a long-range program of standardization in the office, and a standardization committee was set up to work towards the development of approved practices.

It was soon realized, however, that many of these problems involved interests beyond the strictly office management field. There is the producer's as well as the user's angle to consider.

In order to broaden the scope of its standardization activity and to get the benefit of specialized facilities in the development of this project, the Board of Directors of the National Office Management Association last January authorized a formal request to the American Standards Association for a broad, cooperative standardization effort under the auspices of that organization. As a result, a meeting of representatives of office equipment manufacturers, Government procurement agencies, and other groups that had shown an interest in office standardization was called by the ASA on August 21. This group agreed that the standardization along the lines outlined above is needed and that a standardization program should be undertaken. However, it recommended to the American Standards Association that work be started first on selected sections of the large over-all problem. Specifically, the recommendation was that three committees be organized, one to work on standards for office equipment (desks, vaults, files, etc); the second to work on standards for labor-saving office machines (typewriters, duplicating machines, calculating machines); third, to work on office supplies (ink, paper, pencils, erasers, rubber bands). It was the recommendation of the meeting that the National Office Management Association be asked by the American Standards Association to accept sponsorship for the committees on office equipment and office supplies. The question of sponsorship for the project on labor-saving machines was left open until the ASA had an opportunity to investigate this subject further. To my mind, this action is one of the most important and most potentially valuable steps that has yet been taken in the field of office management.

# Tesi Is New ASA Staff Member On Standards for Consumer Goods

TO help in the rapidly expanding program on standards for consumer goods, an additional engineer, A. Frank Tesi, has been appointed to the staff of the American Standards Association as a specialist in this important field.

Dr Tesi comes to the organization after 15 years of association with the Mellon Institute, where much of his time was spent in working under Dr Jules Labarthe, Jr, on the Kaufmann Department Store "Commodity Standards" Fellowship. Included among his duties were the evaluation of a large variety of consumer products by standard methods; the development of suitable test methods when standard methods were either not available or inadequate; the correlation of these test results so that suitable and practical standards could be evolved; and the actual writing of specifications for at least 300 items. These included many textile products, household electrical appliances, soaps, cleaners, and furniture.

Prior to this, Dr Tesi had been assigned to another fellowship program—that of studying the possibility of making synthetic waxes.

In March 1945, Dr. Tesi left his work on the "Commodity Standards" Fellowship to become Senior Fellow on the Mineral Products Fellowship. Here he was concerned with the utilization of waste sand from the polishing of plate glass which involved the altering of ceramic formulae to fit the product into already established procedures.

## Crittenden New Member Of Committee on Measures

The election of Dr. E. C. Crittenden, associate director of the National Bureau of Standards, to membership in the International Committee on Weights and Measures has been announced by Dr E. U. Condon, director of the Bureau.

The International Committee, consisting of 16 scientists chosen from the 32 member nations, is engaged in developing scientific standards of measurement and in securing their uniformity throughout the world. The meetings of the committee, interrupted during the war, are now to be resumed, and the first postwar session will be held at Sevres, France, beginning on October 22, 1946.

Dr Crittenden is an authority on the measurement of light and has contributed extensively to the field of electrical measurements. For his contributions to the development and establishment of acceptable standards and units for the measurement of light he was recently awarded the Illuminating Engineering Society Medal, highest honor in the field of lighting (see INDUSTRIAL STANDARDIZATION, August, 1946, page 195). In June of this year, the Case School of Applied Science awarded him the honorary degree of doctor of science.

# Standards Council Authorizes Project To Develop Safety Code for Manlifts

THE initiation of a new project on manlifts, to be known as A90, has been approved by the Standards Council of the American Standards Association. The American Society of Mechanical Engineers and the National Conservation Bureau have been invited to serve as joint sponsors of the project, the scope of which will cover the construction, maintenance, and operation of manlifts in relation to accident hazards to employees and to the public. Manlifts covered by this scope consist of platforms or brackets mounted on, or attached to, an endless belt, or cables, or chains, or similar method of suspension. These belts, cables, or chains operate vertically and are supported by, and driven through, pulleys, sheaves, or sprockets at the top and bottom. These manlifts are intended for conveyances of persons, or persons and materials. It is not intended that the project will cover escalators, elevators with enclosed platforms ("Pater-noster" elevators), or conveyors used only for conveying materials.

This action comes as a climax to a letter from David L. Lindquist, chief engineer of the Otis Elevator Company, dating back to early in 1944 when he suggested that the ASA consider the formulation of safety rules for manlifts.

### Committee Decided Manlifts Had No Place in Elevator Code

The subject had been previously considered when the American Standard Safety Code for Elevators, Dumbwaiters, and Escalators, A17, was first prepared. At that time, it had been agreed to exclude mention of manlifts because members of the committee felt that the subject did not belong in the elevator code.

Many accidents and several deaths have been caused by passengers riding beyond the top terminal of manlifts and being crushed between the top of the lift and the ceiling, where in some cases clearance between these members was found to be as little as four inches. Others have resulted from the breaking of the belt or the wearing down of steps and hand fastenings so that they pulled loose from the belt.

Often the carelessness of a workman in trying to ride a manlift with at least one hand full of tools has caused him to lose his grip or to drop tools which injured someone riding below him.

### Safety Devices and Inspection Suggested to Prevent Accidents

Safety devices and proper inspection have been suggested as possible preventives in cutting down this accident rate. One organization has already taken enormous strides in checking one of these hazards. It has installed an upper terminal safety stop in the form of a photo-electric relay connected in series with the regular electric contact. If the mechanical stop fails to function, the electronic device will automatically cut the current, causing the belt to stop.

In addition, the National Safety Council has developed an Industrial Data Sheet with suggested safety instructions for the operation of manlifts.

When the problem was first presented to the Safety Code Correlating Committee of the American Standards Association for consideration, there were numerous opinions concerning the disposal of the project. It was suggested that this subject should be included in the scope of the present Sectional Committee on Elevators, Dumbwaiters and Escalators, A17, or the project on Conveyors and Conveying Machinery, B20. However, upon recommendation from a small group representing both the A17 and B20 committees, the Safety Code Correlating Committee recommended to the Standards Council that a separate project be initiated. A letter ballot of the Standards Council confirmed this action.

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If any readers of INDUSTRIAL STANDARDIZATION are interested in this problem, please advise the American Standards Association. Since the sectional committee is in the process of formation, all comments will be welcomed.

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## Fire Prevention Week To Be October 6 through 12

The week of October 6-12 will be celebrated this year as National Fire Prevention Week in the United States and Canada by proclamation of President Truman and the Governor General of Canada. With the National Fire Protection Association and other cooperating agencies directing activities, programs for the campaign are planned and will be carried out under the general direction of the municipalities.

Fire losses in the United States for the 12-month period ending June 30, 1946, were estimated at $519,244,000, representing an increased loss of $76,367,000 over the previous 12-month period. It is expected that 1946 fire loss will reach $590,000,000, exceeding the 1926 record amount of $562,000,000.

Stressing the need for public education and action, the NFPA points out that 90 percent of all fires are preventable. Several American Safety Standards have been promulgated for protection against fire and provide a check for effective fire prevention measures. Among these standards are: Methods of Fire Tests of Building Construction and Materials, A2.1-1942; Methods of Fire Tests of Door Assemblies, A2.2-1942; the series on Prevention of Dust Explosions, Z12; and Protection Against Lightning, C5.

Following the 1946 fire prevention campaign, reports of the work accomplished in local communities should be forwarded to T. Alfred Fleming, Committee on Fire Prevention and Clean-Up Campaign, 85 John Street, New York 7, N. Y.

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## Ainsworth to Serve on Executive Committee For Safety Conference

Cyril Ainsworth, technical director and assistant secretary of the American Standards Association, has accepted an appointment to serve on the Executive Committee of the 17th Annual Safety Conference and Exposition. The event, sponsored by the Greater New York Safety Council, Inc, is headed by William F. Brown as general chairman. It will be held in New York in the spring of 1947.

# Inspection by Photography

**By Harry F. Schoenfelder**

## How the Quartermaster Corps gets uniform results from inspection of textiles by using standard visual inspection charts showing exact nature of defects by means of three-dimensional photography

THE classification of textile defects and the nomenclature used to describe the defects have vexed the Quartermaster Corps for a number of years; no doubt many in the commercial field have experienced the same problems in the production and distribution of textiles for the civilian market.

The development of Vectographs (third-dimensional pictures) for use as visual inspection gages to illustrate defects in the material, to establish tolerance limits, and to obtain greater uniformity in the inspection of textiles and related items, goes back to the early fall of 1943, when experiments had been started on methods to establish uniform standards of inspection for all items procured at that time by the Quartermaster Corps.

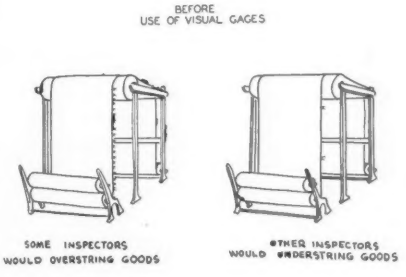
Prior to the early fall of 1943, when the inspection of textiles was generally performed at the Philadelphia Quartermaster Depot, instructions for the classification of textile defects were, in general, oral.

It might be well at this point to explain that defects in textiles are usually indicated by sewing a small string in the cloth along the selvage edge. These strings are the basis for deductions which are taken as penalties in accordance with the terms of the contract.

Defects were strung pretty much in accordance with each inspector's own personal judgment of the degree of seriousness of the defects, ofttimes without regard to the ultimate end use of the particular fabric being inspected. There were no standard defect classification charts.

A particular inspector who, prior to his employment with the Quartermaster Corps, had spent many years in a spinning plant had the tendency to be more critical of yarn imperfections than of weaving or finishing imperfections. An inspector whose experience in commercial life was mostly weaving was more conscious of weaving imperfections than of yarn or finishing imperfections. The same held true for men with dyeing and finishing experience.

There was no standard nomenclature for defects. A particular defect such as a "slub", was called one thing in Greeneville, South Carolina, and something else in Providence, Rhode Island. There were continual arguments over the defects' proper nomenclature. Even within the individual mill, different names were used to describe the same defect.




Inspectors did not have a guide so that they could all string or not string defects in the various materials with a minimum of variation. Some inspectors would overstring goods, while other inspectors would understring the same class of goods.

This was also true of the contractors' inspection personnel.

The first attempts to solve the problem were made in the summer of 1943, when the Quartermaster Corps started to accumulate swatches containing all the various defects of each range of fabrics procured by the Army at that time. The swatches were mounted in chart form, and were used by depot inspection personnel. At that time, practically all the final inspection and acceptance of textiles was performed at the Philadelphia Quartermaster Depot. It quickly became apparent that this was the wrong approach. First, it required a tremendous amount of space just to hold the racks of samples. In the second place, we had only one set and they were too bulky to take around to the various plants in the field.

Technologists of the Quartermaster Corps, Quality Control Staff, were assigned to the project, and a study was made to determine what degree of the various defects was to be strung and what was not to be strung.

In order to evaluate properly the seriousness of the various gradations of the defects, the technologists consulted with experienced Quartermaster Corps personnel.

Various experiments were conducted to obtain practical information as to the effect of the defect in the ultimate end use of the particular cloth involved.

An interesting experiment that was conducted along about the fall of 1943 concerned the effect of slight shade bars in cloth, wool,

***Harry F. Schoenfelder,*** *Experimental Engineer, Headquarters, Quartermaster Corps, Inspection Service, Office of the Quartermaster General, presented this paper, with accompanying three-dimensional slides, at a meeting of the American Association of Textile Technologists in April. The three-dimensional pictures are now being used by the Quartermaster Inspection Service as standards for the guidance of its inspectors in the field. They are also receiving some recognition in the textile industry itself as a means of checking on quality of production, Mr Schoenfelder declares.*

serge. At the time, the Army was in critical need of serge for use in manufacturing enlisted men's trousers. One of the large suppliers had tendered a large quantity of serge, the majority of which contained anywhere from 4 to 20 shade bars per piece. Shade bars were always considered a serious defect, and if during inspection it was found that a piece of cloth contained more than an average of one shade bar for each 20 yards of cloth contained in the piece, the piece was rejected. On this basis, the entire quantity would have been rejected.

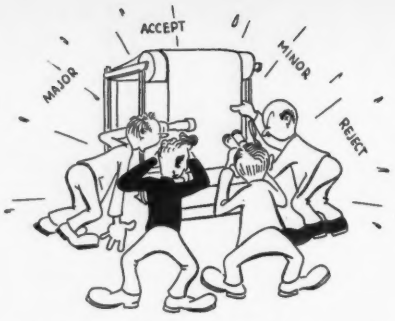
It was decided to select four of the pieces representative of the lot and have them cut up and made into trousers. The garment makers were instructed to cut the cloth without regard to where the defect fell in the pattern. A total of 185 pairs of trousers were made, and after inspection of this lot only two pairs of trousers were found to contain shade bars, and they were hardly noticeable; all the rest had apparently disappeared. It was concluded from this experiment that slight shade bars did not seriously affect the ultimate end use of the item and the large quantity of serge was accepted.

### Inspection Transferred to Contractor's Plant

In the winter of 1943, the final inspection and acceptance of textiles was transferred from the depot to the contractor's plant in the field. It was found to be a physical impossibility to supply each inspector with the exact samples of various tolerances established for the classification of defects. If he were supplied with such samples, it would not be long before their appearance would be changed due to handling.

### Swatches Showing Defects No Help to Quartermaster Corps

While the early experimental charts containing swatches of the various defects and their tolerance limits were of some aid to depot inspection personnel as a means of identifying and classifying defects, this method proved of little or no value to Quartermaster Corps Inspection personnel assigned to the inspection of contracts in the field or to contractors' inspection personnel, who were continually in a quandry as to what should or should not be strung.



ARGUMENTS OVER THE DEFECT'S CLASSIFICATION

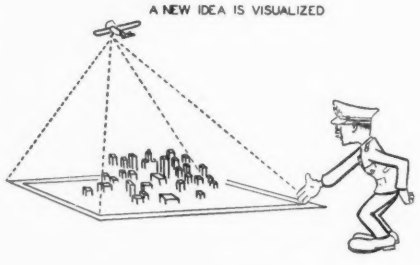
This resulted in numerous arguments as to the proper classification of the defects; the contractor, particularly, was concerned because in some fabrics deductions were taken at the rate of 1½ yards for each major defect, while only ¼ yard deductions were taken if the defects were classified in a lower bracket as minors.

The next attempt to classify the various textile defects and establish tolerance limits was made in the winter of 1943, when written descriptions were used. A series of tentative defects classification charts were developed and were incorporated into the handbooks for factory inspection and acceptance of textiles.

While this attempt to attack the problem was of some value, it was not entirely satisfactory. It was found to be exceedingly difficult to express in words the various gradations of the defects that should or should not be strung. In addition, the nomenclature adopted for use in identifying the various defects were not familiar to all of the contractor's inspection personnel. It was decided, however, to use this method until a better one could be found.

The search for a better method of describing defects and their tolerance limits continued throughout the winter of 1943 and the spring of 1944. Experiments were conducted in color and in black-and-white photography, which are two dimensional. It was soon discovered that the cloth did not photograph as cloth, but showed only a flat surface, and looked much the same as wallpaper. While the defect could be identified, in some cases it could not be determined whether it was on the surface of the cloth or in it.

While the photographs were exceptionally good, they were not satisfactory to the textile technologists. A careful study of the matter disclosed that ordinary photographs, while showing the general characteristics of the cloth and defects, had a tendency to exaggerate or minimize the degree of seriousness of the defect, due to lights and shadows. In addition, they appeared flat and lacked depth. In the case of finish, the photographs failed entirely to illustrate the defect.




The results of the photographic experiments disclosed that some medium would have to be developed that would produce the effect of depth. In the fall of 1944, at the suggestions of Lt Col Albert E. Dennis, then Officer-in-Charge of the Philadelphia Inspection Zone, experiments were conducted with Vectographs (third-dimensional pictures) which utilize the stereopticon effect to produce depth perception. This method was then in use by the Army Air Corps to determine the effectiveness of aerial bombing. The results of these experiments disclosed that by the use of this method it was possible to identify the cloth as to type and also to determine the degree of seriousness of the defect.

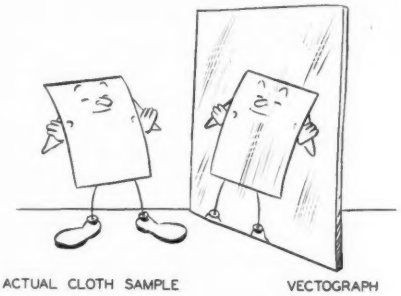
A great deal of research work has been done by the Quartermaster Corps in Vectography, which has resulted in the development of the first practical method that could be employed as a gage for measuring the quality characteristics of textiles as seen by the eye.

The Vectographs, developed as a result of these experiments, are such

exact duplicates of the defects that they can be used as samples of the defects instead of the actual cloth samples. Vectographs cannot be used for color matching because the process is limited to the sepia color and black-and-white. Nor can they reproduce the sensation of feel or handle.

It is now possible, by employing Vectographs as Visual Inspection Gages, to establish a predetermined, uniform set of standards for the classification of textile defects. We can now make, from the same set of film, 2,000 Vectographs which will look exactly like the original sample. By using these Vectographs, all inspectors will have the same standard to go by.

In order to promote uniformity of nomenclature and uniformity of the classification of textile defects, the Quartermaster Corps proposes to prepare sets of Visual Inspection



ACTUAL CLOTH SAMPLE VECTOGRAPH

LOOK EXACTLY ALIKE EXCEPT FOR COLOR AND FEEL. (HANDLE)

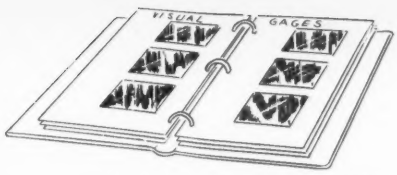
Gages for the various fabrics or groups of fabrics which it procures.

These Visual Inspection Gages will be made available for use by Quartermaster Corps inspectors as well as contractors' inspection personnel. Visual Inspection Gages establish a definite standard, one standard for all mills.

It might be well, at this point, to discuss the various types of measuring and gaging instruments, and point out the differences between them.

It is possible to measure the thickness and length, and to determine the weight of a piece of cloth, by the use of a micrometer, a rule, and a scale, but, it is not possible to measure quality by these means. Evaluating quality of textiles is usually determined by visual comparison with some established gage or standard.

Vectographs are visual gages which can be used to determine quality by comparison, but are limited to operations which can be gaged by

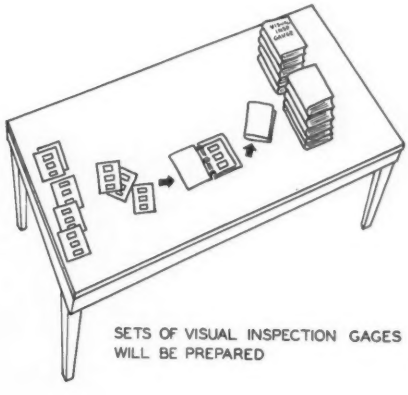



VECTOGRAPHS ARE VISUAL GAGES

the human eye. They are not measuring instruments, nor are they "cure-alls" for all inspection problems. Such characteristics as weight, texture, color, and handle, etc, will have to be determined by other means.

Generally, two gage points are illustrated by Vectographs, one to represent the limit of an irregularity below which the imperfection is not considered a defect, and above which the imperfection is considered a minor or major defect depending upon how bad it is.

The other gage point represents the limit of a minor defect, beyond which the imperfection becomes a major defect. A specimen is sometimes shown as an illustration of a major or minor defect.



SETS OF VISUAL INSPECTION GAGES WILL BE PREPARED

The first phase of the Visual Inspection Gage program pertains to the securing of swatches of the various defects found during inspection of the fabrics procured by the Quartermaster Corps. To date over 6,000 samples have been cataloged.

From these swatches will be selected the ones from which Visual Inspection Gages will be made. The detail and research work connected with the accumulation of the required material and samples will be carried out by technologists of the Quartermaster Corps Quality Control Staff.

After the samples selected are approved, each swatch will be photo-

graphed and Vectograph prints made from which Visual Inspection Gages will be prepared.

In connection with the Visual Inspection Gage program, the Quartermaster Corps is making a study to determine the proper methods to be used in establishing standard testing procedures for use in testing inspectors for visual acuity, color, and depth perception. Studies are also under way to determine what visual qualifications an inspector should have to perform satisfactorily a particular inspection job.

## How Vectographs Are Produced

This is how the production of Vectographs started—

Back in 1833, Sir Charles Wheatstone discovered that if individual pictures (taken the normal pupillary distance apart) were made for each eye and were viewed through a special viewing device, so that the right eye would see the right eye picture and the left eye the left eye picture, visual perception of depth could be obtained.

This basic principle is employed in all third-dimensional pictures.

Back in the early 1900's, the familiar parlor stereoscope, a version of Sir David Brewster's instrument, designed by Dr Oliver Wendell Holmes, was a familiar adornment of every well-knickknacked parlor. In it, paper prints of two stereograms, mounted on a card, are viewed

through a pair of lens segments. This device is still capable of giving a great deal of pleasure. No one thought, at that time, that this basic method would be used in the inspection of textiles.

A POPULAR PARLOR PASTIME

There have been many methods and devices developed over the past 100 years to obtain the stereoscopic effect. The best of these, and the one used by the Quartermaster Corps for Visual Inspection Gages, is a method developed in 1936 by the Polaroid Corporation of Cambridge, Mass. This method employs the medium of light polarizing pictures which permits the viewing of both pictures on the same sheet of Vectograph film without impairing the image quality.

In order to understand how the Vectograph works, it is necessary to discuss briefly the various methods of controlling light.

Certain methods of controlling light have been known for centuries. For example, the problem of focusing light was solved many years ago by the use of lens. The prism has been used for a long time to change the direction of light—to make light turn corners, so to speak.

Means have also been developed to control, to a small extent, the color of light by the use of color filters, and, to some extent, the brightness of light has been controlled.

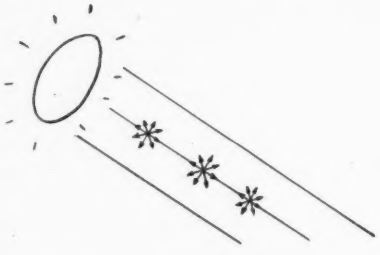
But, a long known characteristic that distinguished light from all other forms of energy, *polarization*, has never, until recently, been controlled except on a minute scale in well-equipped science laboratories.

However, since 1936, the Polaroid Corporation, Cambridge, Mass., had developed materials which have made this control now available on a large scale. These light-polarizing materials are used to control *direct and reflected glare*, to control *brightness*, and to *create* and control *colors*, as well as to create three dimensional pictures.

The Vectograph makes use of a few perfectly straightforward facts about polarized light that physicists have recognized for years.

When you look at a *perfect* light polarizer through another polarizer, it will appear black and opaque if the optical grain (vibration-direction) of the two are *crossed at right angles*. It will be clear and practically *invisible* if the "optical slots" of the two are lined up parallel to each other.

To visualize this phenomenon, regard each light ray as millions of tiny waves with crests vibrating in all directions like the illustration. The arrows indicate the direction of vibration of all the light waves that




**Each light ray can be considered to be millions of tiny waves with crests vibrating in all directions.**

make up the ray, and the equal lengths of all the arrows symbolize equal proportions of light vibrating in each direction.

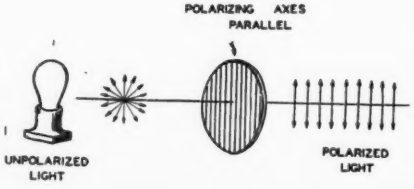
Now, if we place a polarizing disc or filter in the path of this light and think of this disc as "optical slots" through which the light vibrations have to squeeze, only the vibrations parallel to the slots can pass completely. All other vibrations can be thought of as wholly shaved off and lost or partially squeezed through the slot. The light that passes through the disc is made up of waves vibrating in the same direction as the optical slots and is called *polarized* or *controlled* light. The direction of its vibration is the axis of polarization of the polarizing disc which is actually made up of optical slots invisible to the naked eye.

When two polarizing discs are placed in the path of the light ray with their slots (polarizing axis) parallel, light passes through. When one of the discs is turned, the intensity of the light is reduced. When they are crossed at right angles, the light is cut off. If we looked through the second disc onto the first disc, it would appear black.

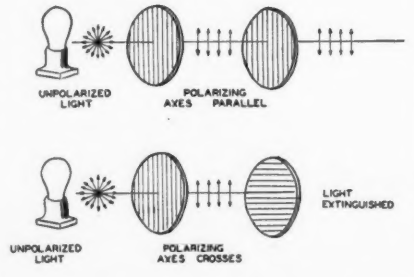
Now, if the polarizer we are looking at is not perfect—if it is only polarizing part of the light—it will not appear black when our viewing polarizer is crossed with it, but it will appear gray. It will be darker or lighter as its degree of *polarization* is greater or less. It will still be invisible, nevertheless, if the viewing polarizer is lined up with it.

These facts are put to use in the Vectograph film in which the image is produced optically through the medium of polarized light. It is *not* an image made in any ordinary way: from a deposit of pigment, a dye, or particles of silver or other metals, such as are used in photography or color processes. The images are intrinsically *light*-polarizers.

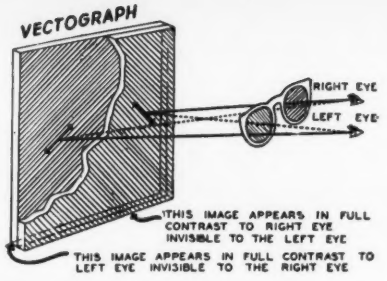
The Vectograph film, before processing, looks very much like unexposed but developed and fixed photographic film. It is a transparent, completely nonpolarizing, smooth-finish acetate sheet. Each surface of the film is composed of molecules which are oriented substantially




**When a polarizing disc is placed in the path of the light, only the light vibrations parallel to the slots in the disc can pass through. These light waves, vibrating in the same direction as the slots, are "polarized" light.**




**When two polarizing discs are placed in the path of the light and one is turned at cross angles, the light is cut off. The Vectograph image is produced by using this principle of polarization.**


VECTOGRAPH
RIGHT EYE
LEFT EYE
THIS IMAGE APPEARS IN FULL CONTRAST TO RIGHT EYE INVISIBLE TO THE LEFT EYE
THIS IMAGE APPEARS IN FULL CONTRAST TO LEFT EYE INVISIBLE TO THE RIGHT EYE

**Special viewers are used by which the images on the two sides of the film are polarized in different directions at 90 degrees to each other. The image on the front of the Vectograph film thus appears in full contrast to the right eye; the image on the back of the film is visible in full contrast to the left eye.**

parallel to one another and at 45 degrees to the edge of the sheet. The orientation axes of the molecules on the two surfaces are at right angles to one another.

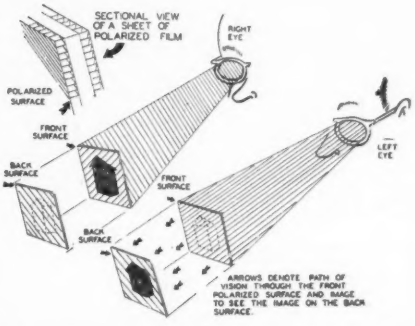
The molecules on each surface have the property of becoming polarized when treated with a special "printing solution." The degree of polarization of the oriented molecules is proportional to the amount of printing solution absorbed.

The Vectograph film has two sides, both actively engaged in producing the images. On each side of the film the printing solution used in processing the Vectographs sets up an image in terms of polarization. The control of the *degree* of polarization determines the point-to-point density of the images when they are seen through the special polarizing viewers. Those areas of the film corresponding to the light portion of the original scene are polarized to a slight degree while those areas corresponding to the dark portion are polarized to a high degree. This is what creates the pictures.

To separate the pictures, one for each eye, something else has to be done. The image on the two sides of the acetate films are polarized in *different directions* at 90 degrees to each other: one 45 degrees to the *left* of vertical, and the other 45 degrees to the *right* of vertical.

When viewed through special viewers which have their polarizing lenses similarly arranged, with the axis of one lens at right angles to that of the other, the picture for each eye becomes discernible.

The image on the front of the Vectograph film appears in full contrast to the right eye because its vibration direction is crossed with the "optical slots" of the right eyepiece. The left eye does not see the image on the front of the film because its vibration direction is parallel to the "optical slots" of the left eyepiece, making the image on the front invisible. Therefore, the left eye sees right through the image on the front surface to the image on the back, which now becomes visible in full contrast to the left eye because its vibration direction is now crossed with the "optical slots" of the left eyepiece.


SECTIONAL VIEW OF A SHEET OF POLARIZED FILM
RIGHT EYE
POLARIZED SURFACE
FRONT SURFACE
BACK SURFACE
FRONT SURFACE
LEFT EYE
BACK SURFACE
ARROWS DENOTE PATH OF VISION THROUGH THE FRONT POLARIZED SURFACE AND IMAGE TO SEE THE IMAGE ON THE BACK SURFACE

**How the Viewers Are Used to Give an Impression of Depth.**

Through the special viewers, the right eye sees the image on the front surface of the film, and the left eye the image on the back surface of the film. There is no conflict. Only one image is visible to each eye. The brain fuses the two images into a single three-dimensional impression.

It is most important that persons viewing these third-dimensional pictures have normal and uniform vision. One bad eye would result in seeing only one of the images properly, and the perception of depth would be lost entirely.

Three-dimensional pictures always involve the taking of two ordinary photographs of the scene from two different points, one picture for the right eye and one picture for the left eye.

The interocular distance, or the amount of lateral displacement between exposures, for ordinary purposes is 2½ to 3 inches, but varies depending upon the distance the subject is from the camera for precision work. Roughly, it is equal to the distance between the center of the pupils of each eye, which averages 2.56 inches in whites.

Various methods can be used to take the pictures. Two cameras properly spaced, with matched lenses and shutters, or a single-lens camera with a special beam-splitter attachment can be used.

A single, twin-lens camera is also used. These three methods are generally used for taking action pictures where the subject is in motion.

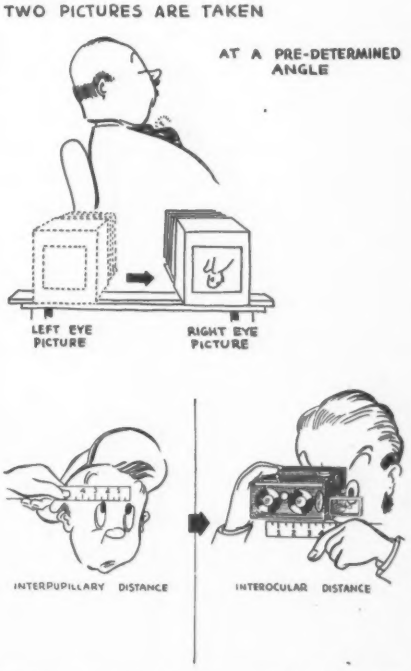
Where the subject is static, a single-lens camera, mounted on a movable base or slide bar, can be used. This is the type used by the Quartermaster Corps.

After the two photographs for each eye are taken, the film is developed and ordinary photographic negatives are made.

From these negatives, a pair of contact prints are made on Eastman wash-off relief film. (The same film used for making color prints.)

This part of the process is much like making a regular paper print, except that a wash-off bath replaces the usual fixing bath. This pair of reliefs, while still wet, are hinged together with their emulsion sides face to face.

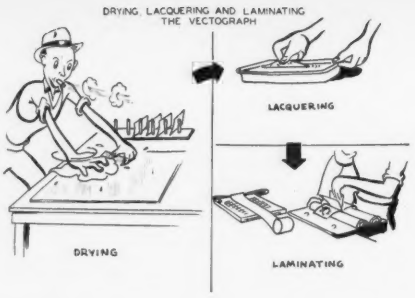
They are next soaked in a special printing solution for approximately five minutes, or until the film has absorbed the printing solution. The film is then removed from the printing solution and placed in an ordinary wringer. A sheet of Vectograph film is then placed between the relief film and a sandwich is made by running it through the wringer.




**Pictures must be measured with care to get exact relation between the two images—one as seen by the left eye; the other by the right eye.**

This transfers the printing solution to both surfaces of the Vectograph film and this is what creates the image on it. The relief films have given up all their printing solution to the two thirsty surfaces of the Vectograph film. The images begin to appear, and, in less than a minute, are complete. The Vectograph film is next washed for a minute or so in a special fixing bath.

The excess fixing solution is then removed from the Vectograph print by rubbing it with a chamois. The print is then placed in a rack until it becomes thoroughly dry. After it is thoroughly dry, the Vectograph is




dipped into a very thin lacquer to preserve the surface. It is laminated to an aluminum-surfaced paper by running it through a wringer and is then ready for viewing.

# Public Health Service Issues Drinking Water Standards

Acting upon recommendations of its advisory committee, the United States Public Health Service has issued up-to-date drinking water standards. Although officially they will regulate only carriers and others subject to Federal quarantine regulations, practically they have been designed to serve as a model for use by the State departments of health and other government units concerned with drinking water and public health, the *Public Works Engineers' News Letter* reports.

The earlier standards had been in use from 1924 to 1942 without revision. After three years of experience in applying the 1942 edition of the standards, the advisory committee has made these new recommendations in the interest of greater utility of the standards. Notable among the improvements described by the *News Letter* is the fact that the standards are published separately rather than in conjunction with the *Manual of Recommended Water Sanitation Practices*, as had been done previously. Much confusion had resulted in attempting to determine which portion dealt with the standards and which referred to the recommendations.

Included in the new standards are complete definitions of terms, a statement of suitable water sources, and suitable means of water supply protection. Minimum sampling is specified in terms of population served. Standards are set up for approval or disapproval of water in terms of bacteriological quality, turbidity, color, taste, and chemical characteristics.

## Research to Give Data On Industrial Ventilation

A long-range research program to provide quantitive data for the solution of industrial ventilation problems has been inaugurated as a result of the common interest of the American Society of Heating and Ventilating Engineers and the U.S. Public Health Service in industrial ventilation.

In a questionnaire survey among 200 interested individuals, it was found that more dependable factual data on the design of industrial ventilation systems was desired by almost all who replied. The little information that was available was not getting effective distribution, it was emphasized.

The research program, formulated with the questionnaire results as a guide, was started under the direction of Dr A. D. Brandt of the Public Health Service, who was assigned to the ASHVE Research Laboratory in Cleveland last October. The first two studies, one on the nature and magnitude of energy losses at suction openings, and the other dealing with the nature of air flow in front of and into suction openings, have been completed.

## Committee Asks Data on Abbreviations, Symbols

As one of the first steps in an effort to standardize abbreviations, graphical symbols, and letter symbols used by the refrigeration industry, the ASA Sectional Committee on Refrigeration Nomenclature, B53, sponsored by the American Society of Refrigerating Engineers, is conducting a survey of 200 firms within the industry.

The committee has asked:

(1) What graphical symbols do you use in representing equipment within the refrigeration cycle?
(2) What letter symbols do you use?
(3) What abbreviations do you use?

Results of this sampling are expected to provide a foundation for study, comparison, and eventual selection of the proper nomenclature to adopt as standard.

The inquiry is by no means limited to those firms which were officially contacted. It is hoped that any one interested in the project will forward sets of symbols and abbreviations, together with suggestions, to D. F. Hayes, secretary, Nomenclature Committee B53, American Standards Association, 70 East 45th Street, New York 17, N. Y.

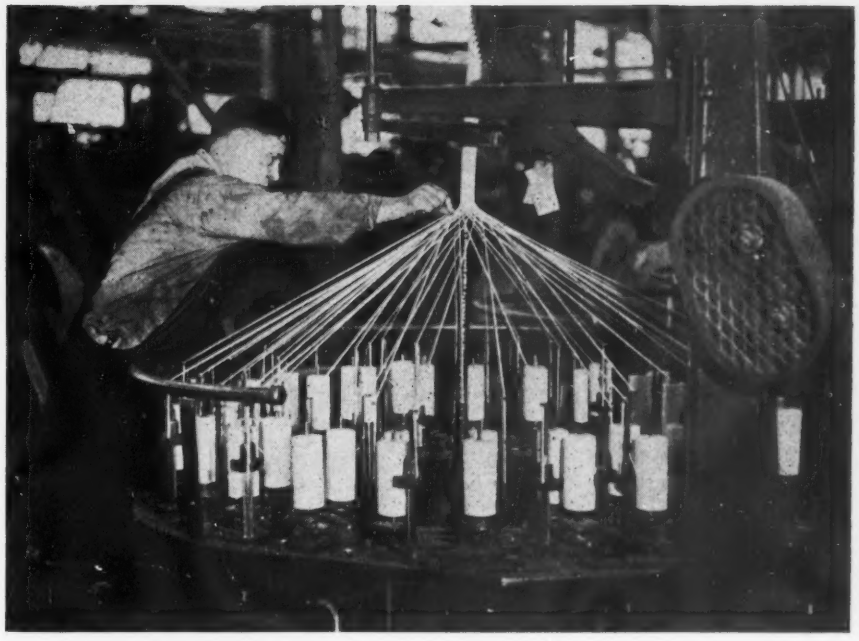
The subcommittee on definitions has already drafted and is now considering a glossary of refrigeration definitions.

## Lingerie Council To Study Standards

The Council of Lingerie Associations and Manufacturers, a trade association recently formed under the leadership of former Governor Robert A. Hurley of Connecticut, is reported to be planning studies "with respect to the extent to which sizes, terminology, and similar matters may be standardized within the industry."

Other projects planned by the new organization include laboratory testing of fabrics offered for sale or commonly used, and of machines and machinery, paper, cartons, thread, and other miscellaneous items used in the industry. Pertinent information will be supplied to members and members of constituent associations.

The Council will also report on the source, quantity, quality, styling, costs of production, and comparative values of lingerie imported into the United States from abroad.



Braiding the insulating cotton tape for a "braided" cable. The cotton is shown here being braided directly around the cable. After application, the cotton insulating tape will be varnished.

*Courtesy General Electric Company*

# *Standard* Yarn Numbering System Proposed to Help Electrical Industry

***By A. A. New***

THE electrical industry uses large amounts of textile yarns in a wide range of different types of yarn and for this reason suffers particularly from the disadvantages arising from the multiplicity of yarn numbering systems. It is natural, therefore, that an electrical manufacturing firm should take an interest in adoption of a Universal Yarn Count System.

The following list shows the number of different yarn sizes typical of those used by a large electrical factory, the total consumption of which may amount to a total of some 1,000 tons per annum (excluding fabrics and fabric base insulating materials): Soft cotton (16 different yarn sizes); flameproofed cotton (2 sizes); mercerized cotton (5 sizes); glazed cotton (4 sizes); cotopa (14 sizes); crestol (5 sizes); natural Chappe silk (1 size); acetate, cuprammonium, fortisan, and nylon (22 sizes); natural silk (Grega selecta) (10 sizes); worsted yarn (2 sizes); linen thread (3 sizes); hempline and seaming twine (3 sizes); jute yarn (2 sizes in lea count); jute yarn (6 sizes, spyndle; lb per 14,400 yd, count).

Of this list of yarns used in a large British electrical factory, the first seven use English cotton count, based on the number of 840 yard hanks weighing 1 lb. However, when used for Chappe silk, the plying numbers have the opposite meaning to that normally employed.

The rayons, Trame, and Grega selecta (but not Chappe) natural silk are numbered in the denier system which is based on the number of half decigrams per 450 meter skein, which is equivalent to grams per 9,000 meters. Worsted yarn is supplied on the English worsted count based on the number of 560 yard hanks weighing 1 lb. Linen yarn, linen thread, hempline, and the finer jutes employ the lea count of the number of 300 yard leas in 1 lb, while the coarser jutes are denoted by the number of pounds that a spyndle of 14,400 yards weighs.

Thus we have five systems of counts in regular use, of which two are of direct (or "normal") type (denier count and Dundee jute count) and three of a reciprocal type (English cotton count, English worsted count, and the Lea count). The plying number can have exactly opposite meanings in different cases, and in the case of two materials, two different counts are employed for the same kind of yarn in a slightly different state. By a direct (or "normal") type count is meant one in which large count numbers mean coarse, heavy yarns and small numbers mean fine yarns, and by a reciprocal-type count is meant one in which the reverse is the case.

The variety of these different counts affects the work of personnel in the purchasing department, the raw material inspection department, and the stores and design engineers. The present complexity of what is fundamentally a simple matter in each case causes extra work and increases the possibility of errors.

The effect is noticed chiefly by those concerned with raw material inspection and with wire and cable

A standard system of numbers for textile yarns would help the electrical industry as well as the textile industry, declares A. A. New, member of the engineering staff of Standard Telephones and Cables, Ltd, London, England, in this article.

Mr New's discussion of the need for a uniform numbering system in Great Britain is especially timely. The American Society for Testing Materials, after several years of study, has just given official approval to such a system—the Grex Universal Yarn Numbering System. This system meets many of the requirements outlined by Mr New. It is now being discussed with the British Committee on Definitions, which has proposed a similar universal system of numbering.

In the opinion of A. G. Scroggie, chairman of Subcommittee B-2 of ASTM Committee D-13 on Textile Materials, the system is applicable to any type of yarn, including those types used in the insulating of wire and cable. Some of the members of the committee have even suggested that the system might be used for the wire and cable itself, as well as for the insulating yarns, and thus help to bring harmony out of the large number of wire gages currently in use in that industry.

The term "Grex", (plural grex, abbreviation gx) applies to both the unit and the system. It is derived from:

GRams pEr 10,000 meters
GR. . .E. .X

The Grex system meets Mr New's recommendations in that it is a direct system defined in terms of weight-per-unit length; it is a metric system; and it permits a large range of magnitudes by the use of multiples or submultiples of the base unit.

design. The ambiguities connected with the methods of expressing the count of multi-ply yarns are also a particular worry of the purchasing department. From the raw material inspection point of view there are five curious sets of arbitrary constants to be applied in determining counts, where from a commonsense point of view one only would be quite sufficient. This means that a better class of operator has to be used on such work than is really necessary, with a consequent tendency to boredom.

Mechanization of such jobs is difficult or impossible. For a wire or cable, or instrument cord designer, the multiplicity of count systems and lack of simple relationships makes it more difficult to derive simple fundamental formulae with regard to covering power, diameters, filling power, etc, than would be the case if these were reduced to one system. In addition to these internal effects in an electrical manufacturing unit, there are also external effects of a similar nature if the British firm is concerned with directing or organizing manufacture at a Continental factory. In this case, the complexity of counts is a handicap, although perhaps a minor one, in getting the job done and in getting British yarns into use.

There is, therefore, a strong argument on many grounds for the adoption of a single count system, whatever the system may be. As to which of the many possible count systems should be preferred is a matter of relatively secondary importance. The following points seem worthy of consideration, however:

(1) The natural thing is to expect a large number to stand for a large or coarse yarn and a small number for a fine one, or in other words, that the count numbers should vary as a direct function of the size or weight of the yarn; i.e., like the denier system and not as an inverse system like the cotton and worsted counts.

(2) Since we are at liberty to choose any numbers, the choice should be the very simplest to calculate and remember, such as the weight per 1, 10, 100, or 1,000 units of length.

(3) Since the metric system of weights and measures is taught in the schools in Great Britain, is well established in scientific work, in that country, and for general purposes on the Continent, and export trade is going to be very important in the future, a metric basis seems preferable.

(4) A universal system for all textiles includes a very large range of magnitudes. For this reason, the fine silks or cottons at one end of the scale would be hampered by the use of fractional counts, or the coarse jute yarns at the other end would have inordinately large count numbers. This difficulty might be overcome simply by basing the count on the weight of one kilometer of the yarn in grams or kilograms, a "1000" yarn being called an "1K". This would mean that the finest silks and cottons would be about $1^s$ or $2^s$ while the coarsest jutes (used in electrical work) would become about "30K". Such a system is, of course, merely the present metric denier system with the count numbers divided by 9. It may be argued that this makes the counts of filaments of rayons have numerical values less than 1. This would be avoided by using a 10 kilometer base which would mean that the count numbers would be very close to the present metric denier count (actual 10X). This consideration does not seem important, however, compared with the simplicity of the "grams per kilometer" basis.

(5) With regard to the method of expressing plying, the only logical way is surely that 2/10's means a 20's. This is a characteristic of the weight per unit length systems and not of the length per unit weight systems with their anomalous principle that "two tens is a fives".

To bring about a change to a single simple system would call for some mental readjustment and for the alteration of records and measuring equipment such as wrap reels, yarn scales, etc, but the gain from such a change would be very definite and would be fairly quickly realized.

## NEMA Annual Meeting October 28-November 1

The National Electrical Manufacturers Association will hold its 1946 Annual Meeting in Atlantic City in October. During the week of October 28 through November 1 it is planned that the nominating committee will submit its report; new members will be elected to the Board of Governors; and awards and certificates will be presented. Exhibits are being prepared for display which highlight the work of the various sectional committees. By presenting these activities it is expected that each group will become familiar with the programs of its associates and will perhaps gain suggestions for new projects of its own.

# General Armstrong Receives Distinguished Service Medal

BRIGADIER GENERAL DONALD ARMSTRONG, newly appointed Assistant to the Chairman of the Executive Committee of the ASA, has been awarded the Distinguished Service Medal "for meritorious and distinguished service."

The presentation was made by the Honorable Kenneth C. Royall, Under Secretary of War, on August 16, 1946, before representatives of the Industrial College of the Armed Forces in Washington. Major General Witsell, Adjutant General of the Army, read the following citation:

"Brigadier General Donald Armstrong, as Commandant of the Industrial College of the Armed Forces, performed meritorious and distinguished service in Washington from February 1945 to July 1946. He demonstrated a broad grasp of educational principles and a thorough knowledge of such complex fields as contract termination, war readjustment, cost and price analysis, and property disposal. By organizing numerous advisory bodies composed of distinguished leaders from industry and learning, he was instrumental in bringing the benefits of their knowledge and experience to the college and the nation and in maintaining the close cooperation of industry and the armed forces. Through his creative imagination, astute judgment, and high sense of duty, General Armstrong contributed materially to a broader practical understanding of industrial mobilization and postwar readjustment."

General Armstrong joined the staff of the American Standards Association on August 1 to work with Howard Coonley, chairman of the ASA Executive Committee, in expanding and developing the activities of the Association. He will also help Mr Coonley in arranging for an adequate budget to enable the ASA to fulfill the enlarged responsibilities which the Policy Committee on Standards, under the chairmanship of Charles E. Wilson, agreed that the ASA should undertake.

# New Standards from Other Countries

THE following new and revised standards, received recently by the American Standards Association from other countries, may be borrowed by ASA Members from the ASA Library or purchased through the Sales Department.

Drafts of standards from other countries are not for sale. They may be borrowed.

### Great Britain

#### New Standards Issued

Case Closures, Section 8M, Supplement No. 3 to BS1133:1943, Section 8L—Metal Lined and Sheathed Cases

Coal Tar Pitches for Building Purposes, BS1310:1946

Non-Ferrous Pipes and Piping Installations for and in Connection with Land Boilers, BS1306:Part I:1946

Reinforced Concrete Street Lighting Columns, BS1308:1946

Sampling and Analysis of Vegetable Tanned and Chrome Tanned Leathers, BS1309:1946

## Foreign Language Standards

The following standards are available solely in the language of the country issuing them. Only the titles have been translated into English.

### France

Levage et manutention

E52-201, Brouette métallique de terrassier: Terminologie et capacités

Levage et manutention—Continued

E52-202, Brouette métallique de terrassier: Roue et essieu

E52-203, Brouette métallique de terrassier: Chassis

E52-204, Chariots de manutention à bras: Terminologie des types et des piéces

E52-205, Chariots de manutention à bras: Terminologie des types de trains de roulements

E52-206, Chariots de manutention à bras: Paliers

E52-207, Chariots de manutention à bras: Roues

E52-208, Chariots de manutention à bras: Roues à bandage élastique

E52-209, Chariot élévateur à bras et plate-forme: Terminologie

E52-210, Chariot élévateur à bras et plate-forme: Gabarit de raccordement

E52-211, Plates-formes pour chariot élévateur à bras: Terminologie

E52-212, Chariots-remorques: Terminologie des types de trains de roulements

E52-213, Chariots-remorques: Terminologie des éléments

E52-214, Chariots-remorques: Attelages

E63-021, Presse mécaniques col de cygne inclinables et non inclinables: Gamme de presses normales de série

# News from other countries

## Head of South African Bureau Describes Standards Program

THE new program being undertaken by the recently organized South African Bureau of Standards is now well started, Mr J. Ritchie, director of the Bureau, told the American Standards Association during a visit to the ASA offices in August.

Mr Ritchie has been away from South Africa for several months, studying the standardization work being done in Great Britain and the United States. He expects to visit Sweden before his return to South Africa, and will attend the plenary meetings of the United Nations Standards Coordinating Committee and the International Standards Association in London in October. He also plans to be in London for the Commonwealth Conference on Standards, a meeting of the directors of national standardizing bodies of the members of the British Commonwealth. This conference was held September 30, just before the meeting on organization of the International Standards Association.

The South African Bureau of Standards was established by Act of the South African Parliament effective June 1, 1945. It is supported by the Government and operates under the general supervision of the Minister of Economic Development, who appoints the members of the Standards Council and approves the Council's selection of the Bureau's director and staff.

The functions of the Bureau cover a wide range, including promotion of standardization in industry and commerce; testing and calibration of precision instruments, gages, and scientific apparatus; assisting in preparation of standard specifications; and operating a certification program based on the use of standard specifications.

Every type of commodity sold in South Africa comes within its scope —food, textiles, paper, building materials, engineering equipment, electrical equipment and supplies, agricultural equipment and supplies. It also covers codes of practice, such as building codes, as well as specifications.

Even though the Act establishing the Bureau is little more than a year old, two draft specifications are already out for comment. These cover DDT—Insecticides, and a proposed Code for Electric Meter Testing. Committees are now actively working on specifications for auto batteries, refractories, stationery, and doorlocks.

The standards developed under the jurisdiction of the Bureau will be prepared by committees representing all groups concerned who cooperate voluntarily in the work. It is planned that most will be voluntary standards, although the Bureau has the authority to make them mandatory if in the opinion of the Minister of Economic Development this is desirable. The South African Standards Institute, supported by industry and operated by a volunteer staff, is cooperating with the Bureau in the work of these committees.

At the present time, the Bureau has a staff of 15 engineers and chemists, librarian, secretaries, and clerks, who work both on the drafting of specifications and on the laboratory testing of products to determine compliance with specifications. A metrology laboratory is already in operation and a chemical laboratory is being set up. A physics laboratory, a paper and textile testing laboratory, and a mechanical and electrical engineering laboratory will be added as soon as it is possible to do so. The Bureau does not plan to do laboratory research, however, but will depend upon the facilities of the Council for Scientific and Industrial Research for any research programs it needs in its work.

As soon as the necessary preliminary work is completed, the Bureau will organize its certification program. This will involve approval of a standardization mark certifying that a product complies with the requirements of a standard specification, and tests of the product to determine whether it actually meets these requirements. Inspectors employed by the Bureau will check the commodities on which the standardization mark is used and collect samples for testing.

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## British Countries Act For More Uniform Standards

Methods for securing greater uniformity in physical standards of measurement and in the use of units, terms, and symbols, were a part of the general discussion at the Empire Scientific Conference held in London in July.

After consideration of the need for eliminating the present slight differences in the values of the British and American yard and pound (lb), it was recommended that discussions of this problem should be conducted with the United States. Sir Charles Darwin will represent the various national laboratories of the Empire in such discussions.

Representatives at the Conference also agreed that it would be desirable for the self-governing Dominions and India to participate in the international organization, the Convention du Mètre, and that meetings of the delegates of the national laboratories in the Empire should be held periodically to consider the maintenance of uniformity of standards of measurement, programs of research, and the interchange of personnel.

The importance of uniformity in terminology used in scientific textbooks and journals was affirmed and a resolution was adopted calling for more active work on this problem.

According to the *Machinery Market*, the conference also indicated that it would welcome the introduction of the metric system in all fields where it is practical to do so, and advocated the writing of textbooks in a form which would meet the needs of a reader conversant with either the British or the metric system of units.

## Australia to Unify Railway Gauges

The report of Sir Harold Clapp on railway gauge unification in Australia (see INDUSTRIAL STANDARDIZATION, February, 1946, page 48) was approved with certain modifications by a recent Premiers' conference, the London *Railway Gazette* notes. The Commonwealth government has now agreed to accept responsibility for one-half of the cost involved instead of the one-fifth which it had accepted previously.

A Railway Standardization Division has been established under the Commonwealth Department of Transport with Sir Harold Clapp as director-general. Other divisions for transport, finance, and materials will be formed as the work proceeds. In collaboration with the Standardization Division, a committee representing the Australian and New Zealand Railway Conferences will prepare many of the standards and designs for railway equipment required.

One of the principal modifications provided for by the Premiers is the construction of a new standard gauge trunk line from Bourke in northern New South Wales, through Queensland and Northern Territory to Darwin. Far more ambitious an undertaking than the original proposal, it is expected to be more valuable in opening up and developing the hinterland of Queensland.

# New Standards in ASA Library

For the information of ASA Members, the American Standards Association publishes a selected list of standards as they are received by the ASA Library. The list below includes only those standards received recently which the ASA believes are of greatest interest to Members.

These standards may be consulted by Members at the ASA Library, or copies may be obtained from the organization issuing the standard. The address of the organization is included for convenience in ordering.

## Associations and Technical Societies

### American Iron and Steel Institute (350 Fifth Avenue, New York 1, N. Y.)

Steel Products Manual—Section 22: Forged Axles and Locomotive Forgings, July 1946, 25¢

### The Tire and Rim Association, Inc (2001 First-Central Tower, Akron 8, Ohio)

1946 Agricultural Handbook (Tire and Rim Standards Included), 50¢

## U.S. Government

**Wherever a price is indicated, the publication may be secured from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. In other cases, copies may be obtained from the government agency concerned.**

### Standards Branch (Room 6046, Procurement Division Building, 7th & D Streets, SW, Washington 25, D.C.)

Federal Specifications are prepared for use by all government departments and establishments in their purchases. Copies are available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 5 cents each. Requests should be accompanied by cash, check, or money order.

As a service to Company Members, the ASA maintains a sale file of all Federal Specifications. These specifications can be purchased from the ASA Sales Department.

#### Federal Specifications

Cellulose, Regenerated; Sheet, Dental, L-C-175, August 1946
Cements, Hydraulic; General Specifications (Methods for Sampling, Inspection, and Testing) (Superseding Fed Spec SS-C-158a), SS-C-158b, August 1946
Glasses; Medicine (Superseding Fed Spec DD-G-616). DD-G-616a, August 1946
Glue; Resin-Type (Liquid and Powder), (Amendment 2), C-G-496, August 1946
Hemoglobin-Scale (Tallquist Type), G-H-222, August 1946
Paper; Articulating, (Amendment 1), GG-P-106, August 1946
Steel, Corrosion-Resisting; Bars and Forgings (Except for Reforging), (Amendment 1), QQ-S-763a, August 1946

#### Federal Specifications—Continued

Steel, Corrosion-Resisting, Plates, Sheets, Strips, and Structural Shapes, (Amendment 1), QQ-S-766a, August 1946
Tapes; Measuring, General-Use, (Amendment 1), GG-T-106, August 1946

### U.S. Department of Agriculture Production and Marketing Administration (Washington 25, D.C.)

Apples for Processing, September 1946
Canned Blueberries or Canned Huckleberries, August 1946
Canned Plums, August 1946
Canned Tomatoes, August 1946
Celery, August 1946
Frozen Berries, August 1946
Shelled Runner Peanuts, September 1946

### U.S. Department of Commerce National Bureau of Standards (Washington 25, D.C.)

#### Commercial Standards

Hardware Cloth, CS132-46, 5¢
Nipples, Pipes; Brass, Copper, Steel and Wrought-Iron (Second Edition), CS5-46, 5¢

#### Simplified Practice Recommendations

Abrasive Products; Coated, R89-46, 10¢
Rivets, Steel, R221-46, 5¢
Wrenches, Box and Open-End, R220-46, 5¢

# Actions on Commercial Standards and Simplified Practice Recommendations

## Simplified Practice Recommendations

### Announced by the Division of Simplified Practice, National Bureau of Standards

#### Asphalt Tile—

Now before the industry for comment and approval is a proposed Simplified Practice Recommendation for Asphalt Tile. The establishment of simplified lists of sizes and colors of asphalt tile and cove base adequate for all ordinary needs is the aim of the recommendation, the Division announces.

#### Brass or Bronze Valves, R183-46—

Printed copies of this recommendation are now available. The recommendation, effective from September 1, 1942, applies to gate, globe, angle, and check valves made of brass or bronze. For each of these kinds and types of valves, a simplified list of sizes and corresponding service ratings is given. The primary ratings range from 100 to 350 pounds per square inch. Water, oil, and gas ratings of 1,000 and 2,000 pounds and higher, together with the size range for certain kinds of these valves, are included.

The original recommendation became effective January 1, 1942, and subsequently served as the basis for mandatory orders issued by the War Production Board. Following revocation of the last of these orders, the standing committee drafted a revision to retain the essential purpose of the original recommendation and include those features of the wartime order which had been found to be of benefit to producers, distributors, and users, the Division of Simplified Practice explains.

#### Coated Abrasive Products, R89-46—

This recommendation has been approved for promulgation. A revision of R89-40, it includes simplified lists for flint and emery coated abrasives and for coated abrasives other than flint and emery. (For detailed description of this SPR, see INDUSTRIAL STANDARDIZATION, April, 1946, page 91.)

#### Dental Excavating Burs, R195-46—

The proposed revision of Simplified Practice Recommendation R195-42, Dental Excavating Burs, has been approved for promulgation. It will be identified as R195-46 and will be effective from September 1, 1946. (For detailed description of this SPR, see INDUSTRIAL STANDARDIZATION, June, 1946, page 157.)

#### Fluid Milk Cans, R208-46—

Approval by industry of the proposed revision of Simplified Practice Recommendation R208-45, Milk Shipping Cans, has been announced and it will be effective from August 1, 1946. (For detailed description of this SPR, see INDUSTRIAL STANDARDIZATION, August, 1946, page 211.)

#### Grinding Wheels, R45-39—

A revision of Simplified Practice Recommendation R45-39 has been approved by the standing committee in charge of the recommendation for distribution to all interests for comment, acceptance, or both.

Among the changes proposed are the addition of a number of shape types, including cones and plugs, not previously listed, and an improved method of use classification which will facilitate the selection of a wheel of suitable size, shape, and bond.

#### Hack-Saw Blades, R90-46—

Simplified Practice Recommendation R90-46, Hack-Saw Blades, has been approved for promulgation and printed copies are now available. (For detailed description of this SPR, see INDUSTRIAL STANDARDIZATION, April, 1946, page 91.)

#### Medical and Surgical Hypodermic Needles—

A voluntary Simplified Practice Recommendation covering gages, lengths, and types of medical and surgical hypodermic needles for hospital use has been submitted to the manufacturers and representative hospitals for comment or approval.

#### Structural Insulating Board, R179-42—

The standing committee in charge of Simplified Practice Recommendation R179-42, Structural Insulating Board (Wood or Other Vegetable Fiber) has approved a proposed revision for distribution to all interests for comment, acceptance, or both.

No longer included in the proposed recommendation as standard stock-production items are building board in the ¾-inch thickness; sheathing in the 8½- and 9½-foot lengths; insulating plaster lath in 16- and 24-inch widths; tile-board (panels) in 8- x 8-inch size; and plank in 6-foot lengths. The thin board has been dropped from the recommendation since this type of board is not considered an insulating board product. A simplified list of recommended sizes, thicknesses, edges, and surface colors has been added for interior boards (factory finished), also surface colors are recommended for building board, tile-board, and plank.

#### Welded Chain, R100-29—

A proposed revision of this recommendation has been approved for distribution to the industry for acceptance.

The proposed revision is for the purpose of re-establishing this recommendation as a voluntary standard of practice, following curtailment of manufacture and sale of chain by the War Production Board during the war. It would establish lists of stock sizes and types of welded chain for many industrial and agricultural purposes. The proposal is for welded chain only, but does not cover pocket wheel chain, stud link anchor chain, welded brass chain and welded sash chain; nor does it cover special assemblies such as sling chains, railroad, mine, and boom or rafting chains.

## Commercial Standards

### Announced by the Division of Trade Standards, National Bureau of Standards

#### Blankets for Hospitals (Wool, and Wool and Cotton), CS136-46—

Effective for new production from August 20, 1946, is a Commercial Standard for Blankets for Hospitals. It provides a nationally recognized standard for wool, and wool and cotton blankets for use in hospitals covering the practice of the industry in effect during the emergency.

Covering three types of blankets for hospital use, according to wool content, it includes for each type minimum requirements covering size, weight per square yard, thickness, breaking strength, compressibility, colorfastness, shrinkage, and launderability; methods of test; and the recommended wording by which manufacturers and distributors may guarantee compliance with the Commercial Standard.

#### Cotton Fabric Tents, Tarpaulins, and Covers (Second Edition), CS28-46—

The scope of this Commercial Standard is to provide the basis and method of marking the type, weight, and size of cotton fabric tents, tarpaulins, and covers, either treated, or untreated. It also illustrates the manner in which manufacturers and distributors may label their products to show compliance with the standard. It is effective for new production from April 15, 1946.

# —ASA Standards Activities—

## American Standards

### American Standards Approved

Allowable Concentration of Trichloroethylene, Z37.19-1946
*Endorsing Sponsor:* American Industrial Hygiene Association
Construction and Maintenance of Ladders and Stairs for Mines, M12.1-1946 (Revision of American Tentative Standard M12-1928)
*Sponsor:* American Mining Congress
Sizes of Clay and Concrete Modular Masonry Units, A62.3-1946
*Sponsors:* American Institute of Architects; Producers' Council
Still Photography:
- Dimensions for 35-Millimeter Film Magazines for Still Picture Cameras, Z38.1.47-1946
- Reels for Processed Microfilm, Z38.7.17-1946
- Specifications for Microfilm Readers, Z38.7.9-1946
- Specifications for 35-Millimeter Slidefilm Projection Rolls, Z38.3.3-1946

*Sponsor:* Optical Society of America

### Standards Being Considered by ASA for Approval

Bedding and Upholstery:
- Definitions (Including Tolerances) for Cotton Filling Materials for Bedding and Upholstery, L12.1
- Definitions (Including Tolerances) for Wool Filling Materials for Bedding and Upholstery, L12.2
- Definitions for Miscellaneous Filling Materials for Bedding and Upholstery, L12.4

*Sponsor:* National Association of Bedding and Upholstery Law Enforcement Officials
Involute Splines, B5.15 (Revision of B5.15-1939)
*Sponsors:* American Society of Mechanical Engineers; National Machine Tool Builders' Association; Society of Automotive Engineers, Inc
Letter Symbols for Chemical Engineering, Z10.12
*Sponsors:* American Association for the Advancement of Science; American Institute of Electrical Engineers; American Society of Civil Engineers; American Society of Mechanical Engineers; Society for the Promotion of Engineering Education
Motion Picture Photography:
- Theater Projection Rooms (Revision of American Recommended Practice Z22.28-1941, to be designated as Proposed American Standard Dimensions for Motion Picture Theater Projection Rooms, Z22.28)
- Theater Projection Screens (Revision of American Recommended Practice, Z22.29-1941, to be designated as Proposed American Standard Dimensions for Motion Picture Theater Projection Screens, Z22.29)

Motion Picture Photography—Continued
- Safety Film (Revision of American Recommended Practice Z22.31-1941, to be designated as Proposed American Standard Definition for Motion Picture Safety Film, Z22.31)

*Sponsor:* Society of Motion Picture Engineers

### Standards Submitted to ASA for Approval

Specifications for Portland Cement Stucco and Portland Cement Plastering, A42
*Sponsors:* American Institute of Architects; American Society for Testing Materials
Addenda to American Standard Approval Requirements for Hotel and Restaurant Ranges and Unit Broilers, Z21.3-1940
Addenda to American Standard Approval Requirements for Hotel and Restaurant Deep Fat Fryers, Z21.27-1940
*Sponsor:* American Gas Association
Steel Socket-Welding Fittings, B16.11
*Sponsors:* American Society of Mechanical Engineers; Heating, Piping and Air Conditioning Contractors National Association; Manufacturers Standardization Society of the Valve and Fittings Industry

### New Projects Being Considered

Color Code for Lubrication of Machinery, Z47.1-1945 (peacetime project)
Linemen's Rubber Protective Equipment (peacetime project)
Women's Industrial Clothing (peacetime project)

### New Project Approved

Identification and Cataloging of Antifriction Bearings

### Withdrawal of Approval Being Considered

Rating of Rivers, A36
Backlash for General Purpose Spur Gearing, B6.3-1940
Gear Materials and Blanks, B6.2-1933
*Sponsors:* American Gear Manufacturers Association; American Society of Mechanical Engineers

## American War Standards

### Standards Under Way

Screw Threads, B1
- Buttress Threads
- High-Duty Studs in Light Alloys
- Instrument Threads
- Stub Acme Threads
- Unification of Screw Threads

Women's Industrial Clothing, L17
- Jackets for Outdoor Wear (Slide Fastener Closure), L17.6
- Jackets for Outdoor Wear (Fly-Type Button Closure), L17.5

## News About ASA Projects

### Methods of Measuring Radio Noise, C63—

A subcommitteeof the ASA War Committee on Methods of Measuring Radio Noise has prepared recommendations regarding a proposed specification for a radio noise meter which will be transmitted to the United Nations Standards Coordinating Committee for international consideration. They also have prepared a report which gives the status of the work on radio interference in this country. These reports will be considered at a meeting to be held in London in November.

### Safety Code for the Industrial Use of X-Rays, Z54—

A recommendation that a peacetime project on the industrial use of x-rays be initiated has been approved by the ASA Standards Council. The original request for a war project had come from the Director of the U. S. Department of Labor, Division of Labor Standards in 1944 and, in his letter, Mr Zimmer had also recommended the initiation of a peacetime project. The National Bureau of Standards has been invited to serve as sponsor. It is expected that the American War Standard Safety Code for the Industrial Use of X-Rays will be considered when drafting the new code.

### Textile Safety Code, L1—

*Sponsor:* National Safety Council

A special steering committee will meet in Washington on October 16 to prepare a third draft of the revision of the American Standard Textile Safety Code, L1-1929. The committee will probably be composed of A. M. Baltzer, National Safety Council; R. L. Gamble, International Association of Industrial Accident Boards and Commissions; Stewart J. Owen, Jr, National Bureau of Standards; Everett A. Roberts, National Safety Council; S. M. Fessenden, National Association of Finishers of Textile Fabrics; George West, Whitin Machine Works; Robert M. Murray, International Association of Industrial Accident Boards and Commissions; and Russell T. Fisher, National Association of Cotton Manufacturers.

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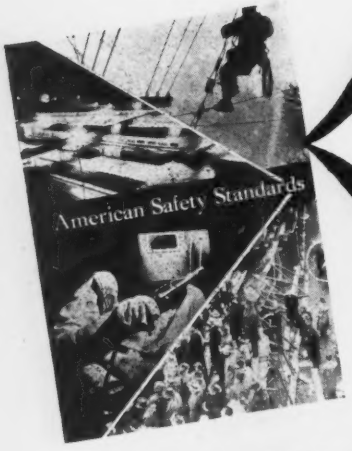


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